THE FIFTY-EIGHTH YEAR.

Companion to the Almanac;

OR,

YEAR-BOOK

OF

GENERAL INFORMATION

FOR

1885.

PART I.

SEISMOLOGY, SANITATION, TECHNICAL EDUCATION, DEER FORESTS AND GROUSE MOORS, THE MERCANTILE MARINE, MUNICIPAL AND LOCAL GOVERNMENT, ASTRONOMICAL INSTRUMENTS, AND OCCUPATIONS OF THE PEOPLE.

PART II.

ARCHITECTURE AND PUBLIC IMPROVEMENTS, ART EXHIBITIONS, SCIENCE, MUSIC, PHILANTHROPY, LEGISLATION, STATISTICS, CHRONICLE AND NECROLOGY OF 1883-84.

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EARTHQUAKES.

THE newest of the "ologies" is the science of Seismology (from the Greek σεισμὸς, a shake, especially applied to a shake or 'quake" of the earth), which treats of the phenomena known as earthquakes. This science alone is capable of telling us something about what is going on in any portion of the globe of the earth below that superficial crust once thought to be its only solid portion, but which is now considered to be a thin, comparatively cold envelope, surrounding a hot and slowly cooling interior. The globe is, in fact, regarded as consisting of solid matter throughout, in a state, indeed, of intense heat below this outer crust composing the strata the study of which is the special province of the geologist, but kept from becoming fluid by the superincumbent pressure of the exterior portion. The establishment of this view comes under the head of general physics, and cannot be touched upon here. Earthquakes and the allied subject of volcanoes have taught us many interesting facts concerning the effects of forces which are in action within the earth's crust, and their continued study will doubtless lead to increased knowledge of the nature, construction, and composition of those portions of the terrestrial globe which lie immediately below the stratified envelope.

Seismology as a science is less than forty years old, and its foundation dates from the investigations of Mr. Robert Mallet in the year 1846. A great and terrible earthquake took place in southern Italy (what was then the kingdom of Naples) on the 16th of December, 1857. At his own urgent request, the Royal Society assisted Mr. Mallet in undertaking a journey to the scene of the disturbance early in 1858, for the purpose of making a scientific study of its effects. So elaborate as well as important were the results obtained that it was found necessary to publish them in the form of a separate treatise in two volumes, which appeared in 1862, under the title of "The First Principles of Observational Seismology." We need make no apology for giving here a rather long extract from the first chapter of that work, as it would be impossible to express its substance, which is at the very root of our present subject, more briefly or more clearly.

"An earthquake," says the author,* "like every other operation of natural forces, must be investigated by means of its phenomena or effects. Some of these are transient or momentary, and leave no trace after the shock, and such must either be observed at the time or had from testimony. But others are more or less permanent, and, from the terrible handwriting of overturned towns and buildings, may be deciphered, more or less clearly, the conditions under which the forces that overthrew them acted, the velocity with which the ground beneath was moved, the extent of its oscillations, and ultimately the point can be found in position and depth beneath the earth's surface, from which the original blow was delivered, which, propagated through the elastic materials of the mass above and around, constituted the shock.

"Again, certain effects, such as landslips, fissures, alterations of watercourses, &c., are produced, of greater or less permanency, affecting the natural features of the shaken country.

"The observation of each of these classes of effects bears reference to two distinct orders of seismic inquiry.

"By the first, we seek to obtain information as to the depth beneath the surface of the earth at which those forces (whether volcanic or otherwise) are in action, whose throbbings are made known to us by the earthquake, and thus to make one great and reliable step towards a knowledge of the nature of these forces themselves; and this is the great and hopeful aspect in

* Vol. i, p. 6.

which seismology must be viewed and chiefly valued. It affords if not the only, certainly, in the existing state of knowledge, the best, means by which we can entertain a well-founded expectation of ultimately obtaining clear and certain ideas as to the material and state of the internal mass of our planet, and comprehending the true nature and relations of volcanic agency.

"By the second order of inquiry we seek to determine the modifying and moulding power of an earthquake upon the surface of our world as we now find it; to trace its effects and estimate their power and extent upon man's habitation and upon himself. The first order of inquiry must be pursued by methods chiefly mechanical, physical, or mathematical; the second by these, combined with the observational tact and largeness of a disciplined imagination and eye that are amongst the accomplishments of the physical field geologist; thus finally uniting our knowledge derived from both directions, ultimately to form a clear conception of what is the function of the earthquake in the Cosmos, and to recognise the connection, fitness, order, and beauty, even of the volcano and the earthquake, as parts of the machinery of a wondrous and perfect creation. Like every aspect of nature that we obtain with the more enlarged and undimmed eye of truth, it will prove to us that even here the great Author of all is a God of order, not of confusion."

It is now well understood that the observed effects of an earthquake shock are produced by vibrations propagated from the centre of disturbance through the solid ground, similar in nature to the vibrations in the air by which sound is conveyed to our ears. From the direction and violence of the shock, as seen in its effects at a large number of places, through the district affected by the shock of December 16, 1857, Mr. Mallet was able to show that the origin of the shock was situated in a cavity, the greatest depth of which was not more than 7 or 8 miles below the surface of the earth, whilst its least depth did not exceed 3 miles. The centre of this cavity, the seismic focus of the shock, must have been below a spot about 50 miles east of Salerno. The district most violently shaken was therefore situated considerably to the north of that convulsed by the Calabrian shocks in February and March, 1783, which were much more destructive in their effects, and concerning which Sir William Hamilton, then Ambassador to the Court of Naples, communicated several very interesting papers to the Royal

Society, which were published in the "Philosophical Transactions."

Mr. Mallet succeeded further in showing that the vertical length of the cavity below the surface of the ground which was torn open or greatly enlarged by the shock, the effects of which were so carefully investigated by him, could not have exceeded 5½ miles, and was probably not more than three. It must have been of the nature of a curved fissure about 9 miles in length, and of very small breadth, lying in a direction nearly north-east and south-west. The town situated nearest to this line is Potenza, and this suffered very severely from the earthquake. Mr. Mallet writes that when he arrived there it was past ten at night, and then "an hour and a half was spent in rain and darkness, groping about through streets encumbered with ruins and props, before we could get lodged. It is a large place, the capital of the province (Basilicata), an archiepiscopal city, and, standing at the eastern verge of the high Apennine ridges, with a vast, fertile, rolling country stretching westward before it to the Adriatic, has a great traffic and current of country travellers." Although, however, very considerable destruction and loss of life had taken place at Potenza, these were very much less than at the smaller town Montemurro (a place of great antiquity, and originally a Saracen settlement), situated on a small tongue of land between two precipitous ravines, nearly parallel to each other, both being in a direction nearly north-west and south-east. Mr. Mallet found this town one vast heap of rubbish, and the frightful proportion of deaths in the population rendered it to this earthquake what Oppido had been to the Calabrian one of 1783.

As this earthquake is the first which has been scientifically studied shortly after its occurrence with the view of ascertaining the origin of the shock, we have given rather full details of it, and have left but little space for treating of those of later date. After referring, in his "Principles of Geology," to several, particularly that in New Zealand in 1855, one effect of which was the permanent upheaval of a tract of land in the North Island nearly as large as Yorkshire to an elevation from 1 to 9 feet higher than before, Sir Charles Lyell asks (Book II, chap. 28), "With a knowledge of these and other terrific catastrophes, witnessed during so brief a period by the present generation, will the geologist declare with perfect composure that the earth has at length settled into a state of repose?"

Events near us affect us more than greater ones far off, and not only the tremendous destruction which has taken place on the coasts and islands of the Mediterranean during the last few years, but the more unusual occurrence, though attended with much smaller effects, of an earthquake which caused great loss of property, though not of life, in our own island in the spring of the year in which we are writing (1884), will probably lead even many who are not geologists to answer this question for themselves by a very decided negative. The latter occurred on the 22nd of April, a little after nine o'clock in the morning; it was felt chiefly in the hundreds of Lexden and Winstree, in the north-eastern part of Essex, the centre of disturbance having been probably beneath the coast, at the distance of a few miles from Colchester.

We visited the neighbourhood on the 7th of July, paying particular attention to the evidences of destruction still remaining in the village of Wivenhoe, which is situated on the left bank of the river Colne, about 3 miles south-east of Colchester. Part of the tower and battlements of the church were thrown down, and the roof of the nave was broken in some places; the injuries, however, were not of such a character as to damage the fabric itself materially, or to affect the appearance of the interior. A well-known yacht builder in the village (Mr. Wilkins) has stated that, being in his yard at the time of the earthquake, he was lifted up by the shock sufficiently to enable him to see, through the windows of the workshop, the falling chimneys of the buildings on the other side, and he calculated that this implied that the oscillation caused a rise and fall of the ground to an extent of 2 feet 9 inches. We were told by a boatman who ferried us across the Colne close by that he was in the same boat at the time of the earthquake, but that his attention was so completely absorbed by the sudden toppling over of the chimney pots in Rowhedge (a smaller village opposite to Wivenhoe, on the other side of the river) that he was unconscious of any special movement or oscillation of his boat.

Dr. J. E. Taylor, F.L.S., visited the whole district affected by the earthquake not long after the shock, and his account is published in two consecutive numbers (for May 1st and 8th) of that well-known weekly scientific serial, "Nature." The village of Langenhoe, which is near the marshes on the coast opposite the Isle of Mersea, and almost exactly south of Colchester, seems to have suffered more severely than Wivenhoe. The greater,

and, in fact, practically complete, destruction of its church was, however, partly due to the more decayed condition of the building previously existing, and particularly of its tower. "It is a sad sight," says Dr. Taylor, "to see this picturesque, ivy-clad, old church—standing so prettily, overlooking the creeks where the ancient Danish vikings landed in the dawn of our modern history but a comparatively few years before the church was built—now so utterly ruined."

As one result of Dr. Taylor's examination of the district, he ascertained that the centre of disturbance, or seismic vertical, was probably below the channel between the mainland of Essex and Mersea Island, very near the strood* or causeway which connects the two. On the mainland side of this is the residence (built in the year 1860) of Mr. Hugh Green, surgeon of the district. This was literally split and cracked in all directions, and the splits and cracks were the most vertical of any that could be seen. The entire building was twisted on its foundations. "At the south-west corner this is visible to the amount of 1½ inch. Dr. Green informed me that he was lifted up from behind and shot violently forward." His consulting room was completely demolished by the fall upon it of a stack of chimneys, and he attributes his own escape to the fact that he had just left the room in order that the process of cleaning it might be commenced; not more than ten seconds afterwards the crash came. Fortunately none of the occupants of the house sustained any injury; indeed, most providential appears to have been the immunity from serious casualty in the whole district. We ourselves were told by a working man in Wivenhoe that he, with his dog, was just about to pass under an archway, when the fall of part of it made them turn back; the dog, he added, has always avoided passing through that place ever since. Mr. Green stated that he distinctly perceived a small shock about six weeks previously, but could not learn that anyone else had noticed it; and Dr. H. J. Benham, of Ipswich, felt a vibration in the floor of his room, succeeded by several oscillations, lasting altogether thirty or forty seconds, a few minutes after 11 o'clock on the night following the earthquake in the morning.

A very interesting question is how far off the shock was felt—which has, of course, considerable connection with the geological conformation of the surrounding districts. Mr. Prince, F.R.A.S.,

* Strood, or stroud, an Old English and Anglo-Saxon word, which afterwards became the modern *strand*, here used in the sense of a low causeway.

of Crowborough Beacon, Sussex (an elevation more than 800 feet above the level of the sea), says that it was noticed there by an invalid neighbour of his. Mr. Shaw Page states that it was similarly felt at Dudbridge, about a mile south-west of Stroud, in Gloucestershire; but the greatest distance at which we have noticed any record of its having been felt was at Street, near Glastonbury, in Somersetshire, 10 miles beyond the Mendip main anticline. A marked and very considerable change was produced (see the letters of Mr. De Rance, F.G.S., in "Nature" for May 8th and 15th) in the level of the underground waters of the district most affected by the shock; it will be interesting to trace how far any such change was effected which it is probable from previous experience would take place in various degrees over a very large area on the same geological formation.

Those who desire to inquire into the nature of the physical causes by which earthquake shocks are in all probability principally produced should study Mallet's paper, published in the "Philosophical Transactions" for 1873, under the title "Volcanic Energy: an Attempt to develop its true Origin and Cosmical Relations." He there shows the close connection between the phenomena of volcanoes and those of earthquakes, the mechanical force of heat being the agent in both. His proposition is that "the heat from which terrestrial volcanic agency is at present derived is produced locally within the solid shell of our globe by transformation of the mechanical work of compression or of crushing of portions of that shell, which compressions and crushings are themselves produced by the more rapid contraction, by cooling, of the hotter material of the nucleus beneath that shell, and the consequent more or less free descent of the shell by gravitation, the vertical work of which is resolved into tangential pressures and motions within the thickness of the shell." His views have met with universal approbation amongst men of science, and we will attempt briefly to explain them, following to a great extent the language of Professor Cleveland Abbé of Washington. The earth is considered to have been once a hot fluid globe. The secular cooling of this gave rise at first to a thin crust, the contraction of which whilst thin was more rapid than that of the interior part, thus causing it to be torn into segments by forces of tension. But as the crust thickened it became subject to strains of the nature of tangential pressures as soon as the interior began to contract more rapidly than the exterior the existence of such pressures

was first pointed out by Prévost, in 1835). The bending and crushing consequent upon these tangential pressures formed the chief mountain chains and ocean beds, as urged by Prévost, Dana, and others. The nucleus shrinking more than the shell, and the latter not being able to resist the strain upon it, it must crush and sink down upon the shrinking nucleus, the crushing being more or less paroxysmal; this crushing is accompanied by an immense evolution of heat, the quantity of which may be calculated by means of the theorems of the mechanical theory of heat. This heat, acting on the already heated interior, abundantly suffices to melt the adjacent portions thereof, producing lava, or to convert water into the steam that produces both earthquakes and volcanic eruptions.

The experiments and calculations of Mallet showed the sufficiency of the causes in question to produce the effects observed, besides throwing much additional light upon the phenomena of earthquakes and volcanoes. As before remarked, his views have secured general acceptance, as being by far the most probable means of explaining these phenomena, and we may conclude with a few words on the life and career of the great seismologist himself.

Robert Mallet was born in Dublin on the 3rd of June, 1810, and graduated in arts at Trinity College, Dublin, in 1830. In 1846 he read before the Royal Irish Academy a paper on the "Dynamics of Earthquakes," which was the first of a long and valuable series of contributions to a branch of physical geology with which his name will ever be associated. Of his labours in connection with the great Neapolitan earthquake of 1857 we have spoken. In 1862 he received the Cunningham Medal of the Royal Irish Academy, and in 1877 the Wollaston Medal of the Geological Society of London. He was elected a Fellow of the Royal Society in 1854, and of the Geological Society in 1859. His death took place in London on the 5th of November, 1881.

W. T. Lynn.

THE INTERNATIONAL HEALTH EXHIBITION.

THE project of holding a series of International Exhibitions in London may be said to have been finally confirmed by the success of the Fisheries Exhibition of the year 1883. At the closing ceremony of that Exhibition, His Royal Highness the Prince of Wales, in reply to the address of the Executive Committee, made the following remarks in reference to the Exhibitions which would successively be held at South Kensington :— "In considering what shall be the subject-matter of these Exhibitions, three topics of paramount interest to our community have presented themselves to my mind. These are Health, both bodily and mental; Industrial Inventions; and the rapidly-growing resources of our Colonies and of our Indian Empire. I have expressed a desire that the Exhibition of 1884 will embrace the conditions of Health, in so far as, like food, clothes, and dwellings, they fall under the head of Hygiene ; or, like appliances for general and technical teaching, gymnasia and schools, under that of Education."

In choosing Health for the principal subject of last year's Exhibition, His Royal Highness was actuated by the consideration that, while the scope of the Exhibition would be sufficiently limited to enable it to be brought within the available space, it yet embraced a sufficiently wide range to give it a very great interest, while it dealt with a subject naturally the most important of all subjects to the people of this and of every other country. It was decided that, while the Exhibition should be limited to matters bearing upon Health, yet the term should be construed in the widest possible sense, the endeavour being made to illustrate all the conditions of healthful life, as regards the food of the people, their clothing, and the dwellings in which they live, or, to use the words of His Royal Highness, "to illustrate all that was best calculated to improve the health of the mind and body of the people."

The classification naturally, therefore, arranged itself under these three main heads—FOOD, DRESS, and the DWELLING. For convenience of arrangement it was found desirable to add to these three principal groups one dealing with industrial hygiene, in which might be illustrated the effect of manufacturing operations generally upon the health of those who carry them on, a

matter of very great, and, as the applications of science to industrial purposes increase, of growing importance. This group was entitled the "WORKSHOP," it being understood that this term included the "place of production" of all articles. The relation of climatology to health appeared to be capable of better treatment in a separate division (METEOROLOGY); while the importance of drawing public attention to the means of assisting those injured in war or by accidents in time of peace, caused the addition of yet another group, for the illustration of such matters, to this department of the Exhibition, and to this group was given the title of AMBULANCE. It was, however, understood from the first that the Exhibition was in no sense to be a medical one, and therefore it was considered unnecessary to extend its scope in such a way that it should take in medical or surgical appliances. As regards the second main division of the Exhibition, EDUCATION, His Royal Highness and those with whom he took counsel felt that the time was singularly appropriate for illustrating this subject, considering the growth of educational systems during the past few years, and the great attention which educational matters have lately been attracting. Since the first Educational Exhibition held in 1854 by the Society of Arts, no Exhibition has been specially devoted to this subject, though, of course, there have been numerous and valuable displays of educational appliances at all great International Exhibitions which have been held in different countries.

With a view of carrying the above proposals into effect, an Executive Council was appointed, of which the Duke of Buckingham and Chandos was nominated Chairman, and Sir James Paget Vice-Chairman. They met for the first time on 5th November, 1883, at the Society of Arts, and continued their meetings there until 1st February last, when the place of meeting was changed to the offices at South Kensington. The direction of the work, and all the Executive powers, remained in the hands of this Council, but they were greatly assisted in the undertaking by a number of Sub-Committees selected from amongst the members of a General Committee, which was formed by the Executive at their earliest meetings. Of these Sub-Committees, there were no less than sixteen. Three dealt with the different classes into which the first group, Food, was divided; one, with Dress; three, with the Sanitation, Heating, Lighting, &c., of the Dwelling House; and one Committee dealt with each of the following subjects:—Ambulance, Workshop

(Industrial Hygiene), School and Education, Technical Education, Meteorology, Library, Laboratory, London Water Supply, India.

The labours of these Committees were great and various. In the award of prizes the jurors were assisted by gentlemen named by the exhibitors, so that, as far as possible, no exhibitor might have just cause of complaint.

The main entrance to the Exhibition, though others were added on this occasion, was that in Exhibition Road, as at the Fisheries in 1883. After passing through the vestibules, visitors were confronted by the great Southern Gallery, which was devoted to a variety of Food Exhibits and kindred objects, Food claiming by right the first place in the economy of an Exhibition devoted to Health. The body of the Southern Gallery contained innumerable samples of preserved provisions, stuffed examples of animals, seeds and roots used for food for men and animals, preserved provisions, wines, beer, mineral waters, and other drinks, and appliances used for feeding and cooking. This gallery, with its handsome arched roof, is the largest and most imposing continuous structure in the Exhibition, but, in spite of its dimensions, it was found quite inadequate to accommodate all the objects which were sent in for exhibition in this group, and, accordingly, numerous annexes and corridors had to be added to it on both sides, those on the north side containing the bakeries and bees, while those on the south were given up to dining-rooms and dairies. Among the most prominent objects was the fine collection of seeds, foods, models, and drawings of Messrs. Sutton and Sons, of Reading. Other excellent displays of the same nature in the immediate neighbourhood were by Messrs. James Carter and Co., Messrs. J. C. Wheeler and Son, and Messrs. E. Webb and Sons. Among the several stuffed specimens of animals fit for food in this part of the gallery, one of the most remarkable was Her Majesty the Queen's prize heifer, Cherry Blossom, stuffed entire by Mr. George Butt. Another well-arranged collection in this category was by Messrs. Rowland, Ward, and Co., who had two large cases, one containing stuffed specimens of edible birds and small game which come in to the London Markets, the other representing a gabled building filled with beautiful specimens of stuffed poultry. Messrs. Keilich and Sons had some fine specimens of heads of deer, bison, &c., and Mr. E. Meek showed a variety of stuffed examples of game birds. In this section

Mr. Tallerman exhibited fresh mutton and beef from Australia, New Zealand, South America, and Russia. The exhibits of confectionery, fruit preserves, biscuits, and other edibles were very extensive, and admirably arranged by the well-known firms they represented. Wine, beer, and aërated waters, as well as the productions of natural springs, made a great display, and one result of the Exhibition will certainly be to show that there is plenty of good wholesome wine to be got at a moderate price from countries such as Hungary and Italy, the productions of which have not as yet met with as much patronage from the wine-drinking British public as they deserve.

In the corridor on the north of the Southern Gallery was a magnificent and most useful display of bakeries and ovens. Several complete bakehouses, furnished with the most improved modern ovens and bread-making machinery, were shown in actual operation by some well-known firms of London bakers and confectioners. Anyone who read the correspondence which appeared some time ago in the daily papers, and the accounts of the special reporters who went the round of the London bakehouses, will remember the unpleasant pictures which were drawn of the primitive and unsanitary condition of these establishments, and will welcome the efforts made in this part of the Exhibition towards effecting a much-needed sanitary reform. A great majority of the ovens actually in use throughout the country are heated by lighting the fire in the very chamber in which the bread is afterwards placed for baking. This fire is withdrawn when the oven is heated up to the proper temperature; but the chamber is of course always more or less contaminated with the products of combustion. Nearly all the ovens exhibited at South Kensington were heated by flues quite distinct from the baking chamber or oven proper, so that the products of combustion never came near the bread. In some cases coal, in others coke, and in others again steam or gas, was employed as the means of heating. The method of heating the ovens is not the only weak point connected with the system of making bread actually practised in the majority of cases; the various operations are, as a rule, carried out by hand, and no guarantee exists of the cleanliness or freedom from infection of the hand-workers. In the Exhibition the various processes were carried out by machinery as far as possible, so that the handling of the bread was reduced to a minimum. The hand-work of mixing and kneading, which is so objectionable when carried

out in the old-fashioned manner, is now in the better class of bakeries superseded by the use of machinery. Among the exhibitors in this important department were Messrs. J. Marshall, Hill, and Sons, Perkins and Son, Baker and Sons, and the Globe Mill Company.

On the southern side of the great gallery were the dairies, which formed one of the most interesting sections of the entire Exhibition. The first of these was a small model dairy of four rooms, all lined with white tiles, and fitted with Messrs. T. Bradford and Company's latest appliances for making butter. The methods of draining, and of cooling, and ventilating this dairy deserved special attention. The second, erected and worked by Messrs. Welford and Sons, Limited, at once struck the eye, as much on account of the beauty of the building as because of the completeness of the exhibit. The front looking on to the gallery represented a picturesque farm-house. The interior contains a shed of six Alderney cows in stalls, and four goats in a paddock, both stalls and paddock being provided with Musgrave's patent cow and goat fittings, and all the latest sanitary arrangements as approved by the Sanitary Assurance Association. There were also a can-cleaning room, offices, butter-making department, and laboratory. The buildings were tastefully lined with tiles, and the windows filled with stained glass. The celebrated Swedish cream separators (G. de Laval's patent) were exhibited in operation. The modern methods of making butter as practised in this dairy may interest many readers. The milk as it comes from the cow is put into tin vessels, which are placed on one of Lewis's patent milk raisers, and upset into a tank or receiver, which stands about 8 feet above the floor. From thence it passes through cloth strainers to the cream separator, where the cream is abstracted in a continuous stream. The action of these separators is extremely ingenious. The milk enters a rapidly-revolving vessel, which by centrifugal action causes the light cream particles to rise to the top, while the skim milk remains at the bottom. Two openings are provided : one on the higher level by which the stream of cream flows off, and the other lower down, which carries away the skim milk. By means of this machine the cream from 100 imperial gallons of milk can be abstracted in an hour and a half, whereas by the old process it would have to stand for twenty-four hours, during which time, if the weather were unfavourable, it might turn sour, and be completely spoiled. It would then have to be skimmed by

hand, in which process a certain quantity of milk is always carried off, thus impoverishing the cream. After separation, the cream is poured into one of Taylor's, Bradford's, or Wade's patent churns, and is converted into butter in about twenty minutes. The butter is then removed from the churn, and the butter-milk and water are carefully pressed out in one of Bradford's butter workers. If allowed to remain in, the water and butter-milk would destroy the keeping properties of the butter. After this, the butter is placed in a Danish cooler or hardening-box for a couple of hours, when it is ready for working into pats. Exclusive of the time required for hardening, it only takes two and a half hours from the time the cows are milked to make forty pounds of butter. A hundred gallons of milk, yielding thirty-six quarts of cream, are required to produce this quantity. The next dairy was that of the London and Provincial Company, which contained a very complete collection of everything in the way of live stock, poultry, vegetable, fruit, bulb and seed products, utensils and machinery, which can possibly be required for, or produced on, a first-class English dairy farm. Various classes of cheeses, butters, natural and artificial milks, and other produce were exhibited, and several methods of cream extraction, and butter and cheese-making demonstrated. The most approved methods for preserving dairy produce by chemical means in refrigerators, and by means of cold dry air machines, were also illustrated. Next door to the above Company, the Express Dairy Company had a large and most picturesque building, in which all the modern processes connected with the production of milk, and the manufacture of butter, cheese, &c., were demonstrated with the same completeness as in the preceding cases. The machinery used in this building was supplied by the Dairy Supply Company, Limited, of Museum Street, W.C.

At the rear of the dairies a novel sight presented itself in the shape of a Tartar encampment. In a rectangular enclosure fifteen mares and as many foals were kept, picketed or loose, as the occasion might require. Two of the dome-shaped tents, made of camel's hair felt, stretched upon a light framework of wood, had been brought from the Khirgiz Steppes, where they are familiar to the traveller as the dwelling-places of the nomad tribes of that dreary country. Three men, two women, and a baby were also brought to England—the husband, wife, and baby being Khirgiz, the second couple Bashkir, while the third man was a Tartar proper. These flat-faced folk wore their

native costumes, and went about their daily duties in solemn gravity, taking no notice of the curiosity of the visitors who surrounded their encampment. When to the above catalogue were added some other good-looking horses, and a few wolf-hounds, we had the whole cargo as brought by Dr. Carrick from the Khirgiz Steppes overland to Orenburg, thence by rail to St. Petersburg, and thereafter by ship from Cronstadt to the Thames. The *raison d'être* of this extra out-of-door Exhibition Court was—Koumiss. Dr. Carrick has a large establishment somewhere in the Khirgiz country for the manufacture of Koumiss for exportation. To show us the difference between the imitation stuff sold in England and the real article, he brought his small hardy mares to South Kensington. The native women milked them five times a day, and the visitor had the opportunity of finding out the nature of mare's milk fermented and unfermented.

Connected with the Food Sections may be mentioned the restaurant of the Vegetarian Society, the headquarters of which are at 75, Princes Street, Manchester, the President being Professor Francis Newman. In this dining-room there were served sixpenny vegetarian dinners, and also choice dinners from the daily bill of fare. No fish, flesh, or fowl was used in this restaurant. Vegetarian cookery books and literature were to be had at the counter. The profits are to be devoted to the feeding of the poor in our large cities during the present winter.

At the extreme end of the gallery was the model of a convict's cell, as found in our model prisons, and, in cases close by, models of the various rations, liquid and solid, allowed to various classes of male and female prisoners, illustrating very effectively prison dietary.

Bee-culture was also represented, the collection of frame and straw hives, extractors, comb foundations and other appliances used in bee-keeping, together with specimens of pure and adulterated honey, and of the articles used as adulterants, being contributed by the British Beekeepers' Association.

Altogether the Food classes were well represented, and as arrangements were made for tasting some of the exhibits visitors had the opportunity of acquiring some practical knowledge in reference to certain foods and drinks.

The East and West Quadrants, on either side of the Conservatory, were devoted to another chief section of the Exhibition—Dress.

The Historical Dress Collection in the West Quadrant was a great source of attraction. There were nineteen cases, containing life-size figures dressed up to represent the costumes in vogue from the time of William the Conqueror down to the Prince Regent, a period of 750 years. Each case contained the figures of a lady and gentleman of the esquire class, and also a peasant woman and artizan of the same epoch. Reigns of sovereigns during which no remarkable change of fashion occurred were omitted, for it may be remarked that at certain periods of our history fashions were very slow to alter, while at other times they succeeded each other with great rapidity. Each reign, for instance, from the time of Elizabeth to Charles II was marked by a strong individuality. In the case of the working classes, the costumes sometimes remained unaltered, or nearly so, for ages. The costumes were all designed by the Hon. Lewis Wingfield, from contemporary authorities, such as missals, tombs, portraits in oil, stained glass windows, engravings, and even caricatures. In each case the authority for the costume was given in the case containing it. The dresses were all executed by Auguste and Co., the wigs by Mr. C. H. Fox, and the figures by Mr. Edwards. In many cases the old fashions were extremely beautiful, and excited feelings of unbounded admiration, while in other instances they appeared to modern eyes to be incredibly senseless and ugly.

In addition to the historical costumes, there was also in this Quadrant a very interesting series of figures clothed in armour and military uniform, illustrating the manner in which the British Army was attired at various periods, from the earliest times down to the present day. There were also specimens of uniforms belonging to foreign armies. The armour of the earlier periods was lent by the War Department from the Tower. The military uniforms of the present time were supplied from the Royal Army Clothing Depôt, by permission of the Secretary for War, and the foreign uniforms were lent by the Governments of the various countries to which they belonged. Many of the military costumes of other periods were lent by Messrs. L. and H. Nathan, who made them under the direction of General Erskine, after researches in the Tower of London and elsewhere. Messrs. John Richardson and Co., of Leicester, exhibited in this part of the Exhibition a complete series of the most inflammable dress fabrics, rendered perfectly safe by means of chemical processes. In this Quadrant also were exhibited hospital uni-

forms, dresses worn by the Greely expedition, and plaster-casts representing various limbs and organs of the human body deformed by the use of improper clothing such as tightly-laced corsets and ill-fitting boots.

In the Conservatory, amongst the more artistic objects relating to dress, reference may be made to the collection of Buckinghamshire lace exhibited by the President of the Executive Council, the Duke of Buckingham and Chandos; and to the specimens of ancient and modern Honiton lace contributed by Messrs. Marshall and Snelgrove. Mrs. F. Hubel sent an excellent collection of all kinds of Irish lace.

Modern Dress was principally represented in the Eastern Quadrant, where numerous examples of every conceivable article of clothing required for the human body from the head to the feet, as well as complete costumes for special purposes, such as sporting, touring, and cycling, diving and life-saving were to be found. The National Dress Society, under the presidency of Vicountess Harberton, sent several varieties of outdoor and evening dresses with divided skirts for ladies and children, and also Mrs. Bishop's Rocky Mountain travelling costume. Hamilton and Co. sent a divided dress for athletics and ordinary wear, said to be indistinguishable from ordinary skirts. Messrs. Farmer and Rogers exhibited some interesting Japanese figures in national costume, and also a collection of Oriental embroidered robes and shawls, many of which were of rare beauty. Men's hats of every description were shown in all stages of manufacture by Messrs. Lincoln and Bennett and Mr. Henry Heath. In the section devoted to waterproof clothing many of the best firms exhibited samples of garments for ordinary and for special purposes in our own and in foreign climates, and also appliances for camping out, and for the use of invalids. The class relating to dress for extreme climates contained principally examples of furs and fur clothing, and a few samples of helmets and other head-gear suited for wear in tropical climates. There were several exhibits in the division relating to dress for sport. Amongst the most novel of these were the cycling costumes for ladies, sent by Mr. J. Goodman, and the samples of hygienic and hygroscopic cloth manufactured to produce a sufficient amount of warmth with the least weight, and possessing special facilities for the absorption of perspiration, exhibited by Messrs. Howell, James, and Co., Limited. Messrs. Benjamin and Co. also sent specimens of their well-known goods; and Mrs. H. F. Baxter

exhibited a lady's costume for the Highlands. Boots and shoes also occupied a considerable space, and many on hygienic principles were well worth attention.

Under the class of machinery and appliances for the production of articles of dress, one of the most interesting exhibits wa that of Messrs. Dent, Allcroft, and Co., who showed the manufacture of gloves from the skin to the finished article.

Many of the exhibits in connection with Education in this country were to be found in the gallery of the Albert Hall, where educational publishers and school furniture manufacturers occupied most of the space. But the new building, known as the City of Guilds of London Institute, contained exhibits still more interesting to educationalists. This building, which has its front in the Exhibition Road, was connected with those of the Health Exhibition. Room No. 1 was occupied mainly by exhibits from the School Board of Glasgow, the examples of sewing work by children of seven and eight years being particularly striking. There were on the table large models of schools at Glasgow and Edinburgh. In Room No. 2, the Society for the Promotion of the German System of Teaching the Deaf illustrated its now generally accepted methods. In the afternoons a class of deaf children demonstrated how while retaining their deafness they had lost their dumbness—an interesting performance. Room No. 3 was devoted to the exhibits of the Birmingham School Board. A raised plan of the site of Birmingham, upon which have been painted the principal streets, the important public buildings, the railway lines, the parks, &c., showed how in each school the children of the capital of the Midlands are made acquainted with the general features of their own district while being instructed in the elementary principles of physical geography. The Board's itinerant system of science-teaching by means of experimental lectures was also illustrated. Here, again, was shown admirable needlework. The School Board for London had Room No. 4 placed at its disposal. At one end a school-room was represented in miniature, including its library and museum. There was also shown a school aquarium, with an interesting history; and close to the door were exhibited several dolls dressed by young children. Ascending a flight of stairs, the visitor reached the apartments where the Finsbury Technical College furnished evidence of the practical character of its work. Room No. 5 contained perhaps the exhibition which best deserved to be described as the most

novel, interesting, and valuable to be found within the building. It was that by which was represented the ancient Institute of the Brothers of the Christian Schools, whose headquarters are in Paris. At these schools children are familiarized with the products and industries of a country by actual sight and touch; they are then instructed as to the various trade-routes thither; and, finally, they are taught the commercial customs of the country, even to the forms of book-keeping adopted there. In manufactures, by means of designs which they have to make, they are made acquainted with every part of a machine, and, when necessary, the instruction is supplemented by visits to the manufactories of the district. At one side of the room were specimens of the art workmanship turned out by the youths in the technical schools at Paris; and hard by work performed by waifs of New York in the Roman Catholic Protectory. In another corner of the room were specimens of writing from all parts of the world. Room No. 6 fell to the National Society. In Rooms Nos. 7, 8, and 9, the French educational exhibits were set out. The technical work was very good. A remarkable collection of work came from the Prevot Orphanage. The exhibits from the Dressmakers and Milliners' Schools, shown in the third room, commanded the attention of the ladies. Our own Home Art Association made an excellent show in the corridor. Again ascending the main staircase, the visitor reached Room No. 10, which was set apart for a variety of exhibits bearing on the education of the deaf and dumb. No. 11 Room was occupied by the Schools for the Blind, the Yorkshire School being prominent; the work, in many instances, inviting expressions of wonder. In No. 12 Room the visitor was introduced to the Kindergarten system. One of the walls carried a diagram illustrating the system, while the "occupations" were scattered about the room. In the centre of the apartment a school-room was erected, where every Saturday forenoon, at half-past 11 o'clock, a class of infants was conducted through an interesting lesson. Room No. 13 contained appliances for sense-culture used in the education of imbecile children at the Royal Albert Asylum for Idiots and Imbeciles, besides exhibits by the Ragged School Union, the Wesleyan Education Committee, the Church of England Sunday School Institute, and the Sunday School Union. Room No. 14 was devoted to technical education exhibits, among which were examples of the education given at the Central Higher School

of the Sheffield School Board; and the School of Art Wood Carving, Kensington, was also represented.

Sanitary and Hygienic matters in connection with the Dwelling, Workshop, and School were well brought forward; but it is only possible to touch on a few of them briefly. Exhibits in these sections were to be found in abundance in the East Central Gallery, the southern end of which was filled with baths and their fittings, and cases of soap by various makers. Looking towards the Albert Hall, the part of the building on the right was given up to materials of construction used in sanitary dwellings, such as bricks, tiles, metal work, flooring, and concrete; also roofing materials, patent stones, paints, &c. The central portion of the gallery was set apart for the workshop, and contained designs for improved factories; apparatus for minimising the danger to health from injurious trades, such as grinding, white lead making, &c.; illustrations of diseases and deformities caused by unwholesome trades and professions, and examples of new inventions for ameliorating the conditions of life of those who are engaged in dangerous occupations, such as coal mining. The portion of this gallery devoted to the school contained designs for schools of improved sanitary arrangement and construction; apparatus for warming, ventilating, and lighting schools; sanitary appliances; means for preventing the spread of infectious diseases; and apparatus for physical training, such as athletic games and gymnasia. There was an unusually fine display of gymnastic appliances. Amongst them the Ling system of gymnastics, lately introduced into this country from Sweden, was found very interesting. The Lander Gymnastic Company had five machines for exercising, without undue strain, the various muscles of the body, a system applicable to the gymnastic training of ladies and elderly people. At the northern end of this building was the East Central Annexe, containing apparatus for the prevention of fires, extincteurs, portable engines, and domestic fire-escapes. At the west end of this annexe were two houses which were worthy of the careful study of every householder. One was a house, the drains, sinks, &c., of which were fitted up in the ordinary way, full of dangers to health and life, which were carefully demonstrated. The other was fitted up with improved appliances which remove all these dangers. Anyone traversing the two houses could not fail to gain a clear idea of the principal defects to be found in our existing dwellings, and of the way in which these defects may best

be rectified. The southern half of the East Gallery was given up to wall decorations and articles of furniture, tiles, non-poisonous paints, patent floorings, and similar objects. The various non-poisonous paints and stains were well worthy of the attention of builders and occupiers of dwelling-houses and factories. The East Annexe which runs parallel with the East Gallery was devoted to domestic sanitary appliances. It contained examples of flushing cisterns, sewer traps and ventilators, drain flushers, lavatories, and generally all those parts of a dwelling-house connected with the sewers, and through which poisoning by sewer-gas is imported into improperly fitted residences. The display in the South Central Gallery of model kitchens, bath-rooms, and dwelling-rooms, with their various appliances and furniture, was as interesting as it was instructive.

Machinery in motion was to be seen in three parallel buildings, the Western Arcade, which forms the continuation of the gallery containing the Aquarium, the West Gallery, and the West Annexe. The first of these contained principally machines connected with the manufacture of clothing, such as sewing and knitting machines, hat and boot-making plant, embroidering machines, and apparatus for the manufacture of cigars and cigarettes. There was also a remarkable handkerchief-loom exhibited by Grant, of Foles Hill, Coventry, the invention of George Hodson, of Leeds; and Henry Heath's machinery for the manufacture of hats, and Pocock Brothers' boot-making apparatus proved very attractive. In the West Gallery were to be found a variety of laundry appliances, machinery for the manufacture of various articles of food and drink, such as chocolate, sweetmeats, jams, mustard, and mineral waters; also soap-making and domestic appliances, such as lifts and ventilating machinery, coffee roasters, and plant for the distillation of sea-water. Soap-making was demonstrated by Messrs. F. S. Cleaver and Sons and Messrs. T. Harvey and Co. In this part of the gallery were many appliances for heating and ventilating public and private buildings and workshops, &c. Amongst these may be mentioned Boyle's self-acting air-pump, ventilator, and air-warmer, ventilating-stoves, and system for ventilating ships; James Howarth's air-heating, cooling, and humidifying apparatus for workshops, draughtless air inlet, for admitting fresh air without the least amount of draught, and screw ventilators for chimneys, for preventing down-draughts. The Blackman Propeller Ventilating Company, Limited, exhi-

bited machines for moving large quantities of air, at a low pressure, with very small power, and for removing dust, steam, noxious fumes, and other gases which render workshops unhealthy. Machinery for the manufacture of articles of food was well represented. Messrs. F. Allen and Sons had a very complete exhibition illustrating machinery and processes connected with the manufacture of chocolate and confectionery, the firm showing no less than twenty-one distinct machines, of which seven are used in the manufacture of chocolate, five in the preparation of cocoa, and seven for making lozenges and comfits. Messrs. Edward Pink and Sons exhibited machinery for the boiling of jam, and the separation of stalks from fruit, which continued in operation as the fruit season progressed. A large space was occupied by Messrs. J. and J. Colman, the mustard manufacturers. It contained machinery for the manufacture of mustard from the seed to flour for use. Close by were to be seen Messrs. Beare, Gosnell, and Co.'s machinery for roasting and grinding coffee, and Messrs. Normandy's marine aërated freshwater apparatus for producing good cold water from sea or other impure water, for use on land, yachts, and torpedo-boats. The greater part of the southern end of the West Gallery was taken up with the exhibits of the mineral water manufacturers. Messrs. James Galloway showed a soda-water machine with double pumps and cylinders which would produce 60,000 bottles a day, and various smaller machines, gas generators, purifiers, and holders, and filling machines. Messrs. Barnett and Foster exhibited a complete factory, showing the processes of manufacturing aërated waters and of bottling beers. A considerable portion of the remainder of the gallery was taken up with machinery for domestic purposes, such as meat cutting and sausage machines, refrigerators, piston freezing machines, knife-cleaners, coffee-pots, &c.

Many of the objects exhibited were of a most important character, notably so the cold-air machinery, which is exercising such an immense influence upon the food supply of this country, by enabling dead meat to be imported from the Australian and New Zealand Colonies at cheap rates. Thanks to the perfection to which this class of machinery has been brought, it is now possible to obtain prime mutton from the antipodes in the London market for 7*d.* and 8*d.* per pound. An exhibit of this class of machinery which attracted much attention was that of Messrs. J. and E. Hall. It comprised two of their smaller

cold-air machines, and a smaller chamber or store in which Australian and New Zealand mutton is kept, in order to demonstrate the practical working of the apparatus. The special features of these machines were their compactness and noiseless working. The larger of the two could deliver from 5,000 to 7,000 cubic feet of air per hour at a temperature of 75° below zero (Fahrenheit), which is enough to preserve 85 tons of meat. The Haslem Foundry and Engineering Company, Limited, also exhibited a dry-air refrigerator to discharge 18,000 cubic feet of air per hour, at 60° Fahrenheit below zero, in connection with a freezing or chilling chamber in which meat is stored. Near this the Committee of Importers of Australian Frozen Mutton exhibited a freezing chamber and meat store.

It would be impossible within a limited space to give more than a brief notice of the different Foreign Courts at the Exhibition. China, though almost last in getting its display in order, produced an exceedingly interesting one, occupying the same space it had at last year's "Fisheries." The display gave a practical illustration of the social life of the Chinaman at home, and all the decorations were carried out by Chinese artists.

The large Annexe, a new building at the Queen's Gate entrance, was appropriated to Belgium, and home exhibits connected with Naval and Military Hygiene, and the sick room, the ambulance waggon, and other objects contributed by the Army Medical Department attracted special attention. The Belgian collection was one of the largest contributed to the Exhibition by any foreign country.

France occupied the eastern half of the South Central Gallery. It showed objects in nearly all the groups relating to public hygiene, to the fitting up of schools, workshops, and industrial dwellings, and to the arrangement and construction of hospitals, dispensaries, crèches, and similar institutions, besides specimens of wines and preserved provisions. The exhibition of apparatus and instruments belonging to the Paris Municipal Laboratory, and to the laboratory of the celebrated M. Pasteur, were of special importance to those visitors who take an interest in scientific research. Amongst other things to be specially noted were the drawings, models, and appliances relating to the water supply, and to the sewage system of the city of Paris, contributed by the Prefecture of the Seine. The Russian Ministry of Marine exhibited a large collection of naval uniforms and clothing, and there was also a fine collection of

furs sent by Paul Michailovich, of St. Petersburg. The Austrian exhibits consisted for the most part of specimens of food products and preserved provisions. Germany sent chiefly wines, beers, and provisions. Amongst the Italian exhibits the most noteworthy were some exquisitely carved cabinets and panels, and some ancient carved chests exhibited by C. Daniele, of Milan. Messrs. Francati and Santa Maria, of Rome, sent cameos and shell jewellery. The Ministry of Marine contributed a set of hospital equipments. The Ministries of the Interior, of Agriculture, and of Public Instruction were also well represented. There was a good variety of wines and preserved foods. The only exhibitor from Canada was the Canadian Pacific Railway Company, which sent a collection of agricultural products from Manitoba and the North-West. The United States of America was represented by the San Jose Fruit Packing Company, of California, which sent specimens of apricots, pears, plums, and other fruit, and Californian honey. Japan, the last country to get its exhibits, made a show somewhat similar to that of China, but costumes and a variety of articles of clothing and materials for the same were predominant.

Among an infinite variety of miscellaneous exhibits and arrangements may be mentioned the grand display in the great Central Gallery, which was devoted to a representative collection designed to illustrate the work of our Schools of Art, and their influence on the art manufactures of the country. The walls were hung with a collection of framed drawings and paintings in various departments of art, prepared by the students, and comprising designs for lace, carpets, and other textile fabrics, wall-papers, and hangings, jewellery, glass, and ceramic ware, furniture, and metal work; while the body of the gallery was filled with a number of cases containing objects manufactured by important firms from the designs of students. At the western end of this gallery was the Indian Collection, and at its eastern end a fine display of art pottery by various manufacturers. The Indian section was not large, and it comprised specimens of artistic metal work, textile fabrics, and some food products, especially tea, as well as jewellery and furniture. A prominent object at the east end of the Central Gallery was the large pavilion of Messrs. Doulton and Co., made of the firm's well-known artistic pottery ware, with its domical roof covered with coloured tiles, and handsome columns, ballusters, friezes, and panels.

Another special feature of the Exhibition was the octagonal pavilion in which the eight water companies supplying London with its potable water joined in a display organised by Sir Francis Bolton, the official analyst of the water drunk in the metropolis. The shape of the pavilion (eight-sided) was chosen so as to give each of the companies an equal side for its own exhibit. From each angle the trunk of a willow tree projected, with branches reaching to the apex of the roof, where they united. On the side of the octagon apportioned to each company—which was distinguished by its name in the centre—was suspended a map showing the area supplied, accompanied by statistics as to the company. Above this appeared the company's source of supply, and above this, again, well-executed paintings of the works, or views of the sources of the company. At each angle of the octagon against the trunk of the willow trees was a full-sized section of the filter-beds used by each company. The public thus saw at a glance the nature of the protection they have that the sewage-polluted water of the Thames and Lea is not sent unpurified into their houses.

By universal consent one of the most popular attractions in the Exhibition was the reproduction of a street of a number of well-known houses in Old London. This work was carried out under the skilful direction of Mr. G. H. Birch, the well-known antiquarian, at the expense of the City Guilds. It cost 15,000*l.* The houses, which were wonderful imitations of the old residences of the citizens of London, were built partly from recent drawings and partly from rare prints in the Gardner collection. The street was a miracle in lath and plaster, which might almost deceive the very elect. It was entered through a wonderful reproduction, on a slightly reduced scale, of Bishopsgate, one of the city gates said to have been built long before the Conquest. The moss on the wall, the statues of Alfred and Aldred, and William the Norman in their niches, the arms of the city and the bishopric, were all realistic to the last degree. Entering the gate, the visitor found himself in a narrow street, on either side of which stood various houses grouped together so as to form a typical thoroughfare in the London of two centuries since. Notable houses were those of Izaac Walton and Dick Whittington.

A special feature in "Old London" was the exhibition made by a number of the City Companies and firms representative of ancient trades. The quaint old-time dresses worn by many of

the workmen and apprentices admirably sustained the realism of the picture. No. 1 shop on the left was occupied by the Worshipful Company of Playcard Makers, represented by Messrs. Goodall, the famous makers. Here were four English cards dating back to 1470, and two French cards to 1480, together with native and foreign cards of various dates between then and now. Hanging outside was a proclamation of 1684 prohibiting the importation of foreign cards. At No. 2, the locale of the Gold and Silver Wire Drawers' Company, the way in which gold lace and embroidery are manufactured was demonstrated. Five qualities of gold and the several degrees of gold wire were exhibited in the window. No. 3 was occupied on behalf of the Saddlers' Company, saddles and harnesses of many descriptions, old and new, filling the shop. Along the east wall, by the ceiling, were different styles of military saddles. The saddles and harness belonging to the Lord Mayor's state-coach, made in 1830, were among the exhibits. A stirrup of the sixteenth century hung near the door, and a collection of old whips. At No. 4, the Pattenmakers' Company brought together a collection which people lingered over. There were exhibited the boots, embroidered and ironshod, worn by Henry VIII at the Field of Cloth of Gold, and a shoe worn by William Hogarth. In the Company's exhibition proper sandals as worn by the early Saxons were illustrated, and specimens of the feet-covering of different periods discovered from time to time during excavations in the City. No. 5 shop was tenanted by the Fanmakers' Company, fans ancient and fans modern, fans English and fans foreign, being exhibited. No. 6 fell to the Shipwrights' Company. A model of the State Barge, built in 1807; of a line-of-battle ship of the wooden-walls period, made by French prisoners at Portland; models of life-boats, and models of Peninsular and Oriental boats, the latter attended by a Hindu in costume, were the chief exhibits. Nos. 7 and 8 were held on behalf of the Company of Goldsmiths, by Messrs. Elkington, who exhibited the "Pilgrim's Shield," in illustration of Bunyan's "Pilgrim's Progress," and "The Milton Shield," descriptive of the leading incidents of "Paradise Lost," the latter a work purchased for the South Kensington Museum. At No. 16 was a display of Turners' craft. No. 15—Oliver Cromwell's house—was possessed by the Horners' Company. In the window was a splendid collection of combs, while inside were numerous specimens of horns mounted in silver, and horned goods generally.

The Joiners' Company occupied No. 14. At No. 13 we met with evidence that the printers, as ever, are in the van of the trades, the enterprising managers of the Leadenhalle Presse having possession of this tenement. Over the way, at No. 17, at the sign of the Glaziers' Company, could be followed the glazing of stained glass. No. 18 was a centre of attraction for many people, for here they could see musical instruments in course of construction. Outside hung a bugle said to have been blown at Waterloo, a battered bugle used by the Guards in the Crimea, an Egyptian bugle taken by the Guards at Tel-el-Kebir, and an old Crimean drum. At No. 19 were shown some novel and splendid works in the way of clocks. Across the street were found the Carvers, represented at No. 12, where the noteworthy exhibits were the collection of old door hinges inside and the specimens of old Italian carving hanging outside. From here up to the church were the representatives of the ironmongers, blacksmiths, brassworkers, and coppersmiths, all busy. Commencing again at the Aldgate, Messrs. Merryweather gave us an idea of the fire apparatus of London 200 years ago, the collection including a fire-engine of the seventeenth century from Windsor Castle. Then we came to No. 20, which was occupied by the Framework Knitters' Company, who exhibited half-a-dozen or more early stocking looms and frames, several of them at work. No. 21—Whittington's house—was held in the name of the Glass Sellers' Company, where glass-cutting, together with a first-class display of glass goods, were to be seen; and Nos. 22 and 23 were given up to the Drapers' Company, who demonstrated the contrast between hand-weaving and weaving by machinery. The last two houses, Nos. 24 and 25, were given over to the Salters' Company.

By arrangement with the Executive Council of the Exhibition the Aquarium of the Fisheries Exhibition was handed over to the National Fish Culture Association, which made it even a greater source of attraction to visitors than it was last year. Some hundreds of young Canadian salmon hatched in last year's Exhibition were shown in one of the outside tanks, and gave evidence not only of considerable growth but of excellent health. From every point of view the Exhibition was a success; the number of visitors up to the 30th of October, the closing day, was 4,167,683.

J. J. Manley.

ANCIENT LONDON BUILDINGS AND THEIR MEMORIES.

In the London of to-day, that mysterious "Greater London," which touches Croydon on the south, Barnet on the north, Stratford on the east, and Ealing on the west, the London of the past is well-nigh lost; while even within the limited circle of the cabman's metropolis—the four-mile radius from Charing Cross—the memorials of days gone by are disappearing, or are being so completely transformed that their original owners or tenants would have much difficulty in recognising them. The few ancient hostelries, with their ample court-yards, which had escaped the destroyer's hand, are fast losing their old features; churches are being taken down to make way for warehouses and business premises; the quaint gable-fronted domiciles of Elizabethan days, which passed unharmed through the Great Fire, are giving place to magnificent structures in the Queen Anne style; and, although spared for the time, the halls of the ancient City Companies are doubtless attracting attention from those who hold that they could possibly devise some utilitarian purposes to which they might be applied. As an argument against any needless destruction of the work of the master builders of the past beauty of architecture is often set forth; but, to a nation which is not ashamed to boast of its past, the glories of the material fabrics may fairly be said to be outshone by those "memories" which cling to their walls, and which people them once more with personages, historic or famous, many of whose names are interwoven in the record of our national life. Though now there may be—

> "No faces at the windows,
> And no footsteps in the hall,"

it requires no great stretch of the imagination, helped as it has been during the past year by a visit to the realistic "Old London" of the Health Exhibition at South Kensington, to recall—

> ". . . the strange unwritten stories
> That these silent chambers hold;"

and to help the reader to connect with the historic buildings which still remain a few of the memories of which we have spoken, and to recall some of those which are day by day fading away from us, will be the object of this paper.

For traces of such associations we may turn almost in any direction, taking St. Paul's Cathedral as a convenient centre, and we shall find that even the very streets, by their names, call up many recollections of the days of yore. Lying immediately under the great dome Paternoster Row at once links the ancient to the modern; its title, borrowed from the Latin opening of the Lord's Prayer, reminding us of an age when a classic tongue was not deemed unfit to yield a name to a London thoroughfare. Passing into Cheapside we have on either hand the landmarks of the ancient trading which was carried forward market-wise, until the citizens settled down into the more solid shop and mart, Bread Street reminding us of the bakers, Milk Street of another staple article of English nutriment, while Hosier's Lane is already lost in the more modern style of Bow Lane, and Soaper's Lane has become Queen Street. The vending of fowls still lingers on the ear as we pass through the Poultry; the sale of fish in days before Billingsgate is recalled by Old Fish Street, while Mr. Loftie sees in Friday Street, leading to Old Fish Street, a relic of the hebdomadal fast day, which still has recognition in the Prayer Book Calendar. Moving eastwards we reach Cornhill, the vantage ground of the old corn trade, and then we light upon a road carrying us back to still earlier times in the ancient Watling Street, the old Dover Road of the days of the Roman occupation; which reappears under the same name at Canterbury, and possibly at other places on the way from London to the sea. Another series of streets puts us in mind of the civic past of the London over which—*pace* the Municipal Reform League—the Lord Mayor is still the admitted sovereign, for we have in Cripplegate, Ludgate Hill, Bishopsgate Street, Newgate Street, Aldersgate Street, the namesakes of the five great gates through which the city was entered. The titles of some of these gates clearly indicate their derivation, although, by the way, Newgate appears to have been so termed on the *lucus a non lucendo* principle, seeing that it was one of the oldest of the antique barriers. Ludgate is of doubtful origin, the mythical King Lud being credited by some authorities with its paternity, while others have striven to connect it with the Leet or Civic Parliament. These gates were of very considerable dimensions, and Ludgate and Newgate served as prisons. Aldersgate has been traced to Aldrich, its reputed Saxon founder, while Stow gives it a refreshing memory of the alder-trees. Cripplegate, which was pulled down more than a cen-

tury ago, tells its own tale, for under its shade the Lazarus of ancient London is said to have asked an alms. Temple Bar, which by many a Londoner used to be accepted as a typical gate, and over the removal of which as many regrets were wasted as if it had been a veritable relic of antiquity, was of comparatively recent origin, having been put up in 1670 by Sir Christopher Wren, in the stead of the wooden gate, which in its turn had replaced the old chain and posts originally marking the site. Those who wish to gain some idea of what the ancient gates resemble will do well to walk through Smithfield to St. John's Square, Clerkenwell, where the gate of the ancient priory of St. John still stands, and dates back about 400 years.

Among other memories of old London which are still with us in the names of well-known districts, and against the re-naming of which a strong protest ought to be raised whenever it is suggested, we have Billingsgate, said to have been christened after Belin, King of the Britons; Covent Garden, the original Convent Garden of the Westminster foundation; Spitalfields, carrying us back to another ecclesiastical house, the Priory of St. Mary, Spital; London Wall, which tells its own tale; Charing Cross, so-called, according to Mr. Loftie, from the middle-Saxon family name of Charing, a word of the same type as Ealing and Yeading, and on the site of which Edward the First erected the cross destined to live to the present hour in the title with the Saxon prefix.

Among the sacred buildings of the metropolis the old collegiate church at Westminster claims precedence of St. Paul's Cathedral by virtue of the age of the existing structure. Its associations as sketched by the late Dean Stanley in his "Historic Memorials" sum up many of the greatest and noblest episodes in our national records, and of late years its use as a burial place for men with an established claim to the honour of their countrymen has added to its supremacy in this respect. As the coronation place of the English sovereigns, the consecration place of many of the bishops of the English Church, and, it may be added, in view of Dean Stanley's use of the building, as the meeting ground for men of all nationalities and sects, it occupies a position which is altogether unique. In common with the neighbouring church of St. Margaret, it is bound up with the life and work of the master printer of England, William Caxton, who lived near the western end of the Abbey, while Chaucer also served as clerk of the works to the Abbey, and had a house

in its precincts. Names famous in literature and music and the other arts meet us at every turn at Westminster, for in addition to Chaucer, who lies in the south aisle of the Abbey, Ben Jonson, Edmund Spenser, Drayton, Handel, Addison, Garrick, Dr. Johnson, Henry Purcell, Sheridan, Charles Dickens, Lord Palmerston, Livingstone, Dean Stanley himself, and a host of others, are buried within its area or precincts, while the names of a still more numerous company are recorded on its walls or kept alive by monument or bust. At the same time it is obviously true, as Addison said, that "there are many poets who have no monuments and many monuments which have no poets," and in support of the essayist's reflection, Mr. Augustus Hare, in his interesting "Walks in London," adds, "those who look upon the tombs of the poets can scarcely fail to observe with surprise how very few are commemorated here (in Poet's Corner) whose works are read now, how many whose very existence is generally forgotten." Still, with all deductions, the old Abbey has many "sermons" in its stones, and a week passed within its walls in studying their witness to our national history will not be misspent. At St. Paul's Cathedral the building may be said to overshadow the claims of all that is to be found beneath it, and as the legend over its northern entrance,

"Si monumentum quæris, circumspice."

justly suggests, it is the memorial of its great architect, Sir Christopher Wren. But while grand in its own imposing presence, the Cathedral is also a monument to its predecessors, for as the late Mr. William Longman reminded us by the title of his handsome and valuable work, "The Three Cathedrals Dedicated to St. Paul," it is the third church which has occupied the noble site. An attempt, which may be credited with a very large measure of success, to bring before us what is now commonly termed "Old St. Paul's"—the earlier church being left out of account—has been made by the Rev. W. Sparrow Simpson, D.D., F.S.A., in his "Chapters in the History of Old St. Paul's," in which he takes the reader for a walk round the building as it stood, with its grand length of 596 feet, its breadth of 104 feet, its nave with twelve bays, and its choir with another twelve, while the choir roof was 101 feet in height. This "walk" Dr. Simpson dates back to 1510, but in the earlier period of the church it had been the scene of many historic events. In 1377 Wyclif appeared before his judges with John of Gaunt as his

companion, and Bishop Courtenay presided at his trial; and then, later on, other famous doctors of the Church were to be found "disputing" under the shadow of the Cathedral, Master Latimer and Bishop Ridley being among the most popular preachers from Paul's Cross. Within the building Queen Elizabeth listened to Dean Nowell on Ash Wednesday, 1565, and in protest against his "rough" remarks on the subject of images, interrupted him with the adjuration, "To your text, Mr. Dean; leave that, we have heard enough of that." King Charles I was a listener to the Paul's Cross preachments, but, according to Dugdale, in 1643, in the time of Isaac Pennington, Lord Mayor, the Cross was, "with the rest of the crosses, pulled down to the ground." The exact date of the removal is probably open to question, but the actual site has been discovered by Mr. Penrose, the present learned surveyor of the Cathedral, and the outline of the octagonal base is to be seen in the churchyard at the north-east angle of the choir of the present church. The base probably measured about 37 feet across, and the diameter of the pulpit itself was 18 feet. Opinions, mainly dependent upon the architectural tastes of those who offer them, will differ as to the relative merits of the Old and New St. Paul's, but whatever may have been the beauty of the building, "when in the thirteenth century it was a vista of Gothic arches," the present church, with its dome, blackened though it is by "the incense which all the chimneys, since the time of Wren, have offered at its shrine," can boast of a grandeur which in England is unsurpassed. The splendid structure, of which Wren himself laid the first stone on June 21st, 1675, and which rose during the Episcopate of Compton, whose palace was hard by in Aldersgate Street, has been the scene of many grand historic functions, while its Deans, including Stillingfleet, Tillotson, Sherlock, Secker, Newton, Copleston, Milman, and Mansel, have left their mark not only on divinity, but on literature generally, for, as Dean Milman, himself no mean master of the penman's craft, reminds us, "Dryden, the great model, as he has been called, of English, avowedly formed himself on Tillotson." The opening of the Cathedral on December 2nd, 1697, was in itself an historic event, for the service of inauguration also formed the thanksgiving for the Peace of Ryswick, and William the Third made his way, with difficulty, it is said, through at least 300,000 of his subjects to the ceremony. Queen Anne went seven times in procession to the great church to commemorate "glorious victories," Blen-

heim among the number ; while on July 7th, 1713, the thanksgiving for the Peace of Utrecht was duly offered, and although Her Majesty preferred "to return thanks to God for peace in her own closet," the two Houses of Parliament attended in State, and the "Charity Children," whose day is now over as far as the Cathedral is concerned, made their first appearance within its walls. It was in 1710 that Wren, by the hands of his son, laid the last and highest stone of the lantern of the cupola. Under the Georges, royal visits to the Cathedral were few and far between. George the First went once in procession ; George the Second never entered it in State ; George the Third went on April 25th, 1789, to make a personal thanksgiving for recovery from sickness ; and again on December 19th, 1797, with the two Houses of Parliament, His Majesty attended to return thanks for naval victories. In the present reign the thanksgiving for the recovery of the Prince of Wales will not be forgotten. As a place of burial for some of the greatest of England's sons—its own architect among the number—the Cathedral has offered shelter to many noted art-workers, including Sir Joshua Reynolds, West, Laurence, Barry, Dance, and Opie ; while of commanders, by sea and land, it has received the ashes of Nelson and Wellington, Cornwallis and St. Vincent, and many more.

Among the Royal chapels in the Metropolis the beautiful little building in the Savoy is emphatically a sanctuary with a history. The property on which it stands was granted by King Henry III in 1245, to Peter, Count of Savoy (hence its name), on his arrival to visit his niece, Queen Eleanor. It was afterwards possessed by Edmund, Earl of Lancaster (1267), and John of Gaunt, during whose tenure of it the palace was destroyed by fire, after which, being inherited by his son, Henry IV, it was vested in the Crown as part of the Duchy of Lancaster, and thus acquired its peculiar dignities and privileges as a royal manor. An hospital was erected in the Savoy under the will of Henry VII, and in Henry VIII's reign a perpetual hospital was incorporated, consisting of a master-chaplain and four other chaplains. This was one of the institutions declared to be illegal in the first of Edward VI, and it was given up to the king. It was re-established in the fourth year of Queen Mary, but was converted into a military hospital and marine infirmary in the reign of Charles II, and shortly after was used as a barrack. The hospital was therefore declared to be dissolved in 1702. When the use of the Liturgy in the vernacular tongue was restored by

Queen Elizabeth, this chapel was the first place in which the service was performed. The chapel, which had been used as the parish church of St. Mary-le-Strand from 1564 to 1717, was made a royal chapel by George III in 1773. The chapel was partially destroyed by fire in 1864, and rebuilt at the sole cost of the Queen in memory of the Prince Consort. The Chapel Royal at Whitehall was formerly a room in the Banqueting House built in the reign of James I. It is often attended by officers of the Government. The Chapel Royal, St. James's, is reserved for the Royal family, for members of both Houses of Parliament, and for peeresses.

Many of the old city churches, apart from their architectural features, have interesting associations. All Hallows, Barking, in Great Tower Street, founded in Norman times by the Abbey of Barking, from which it takes its name, was famous in the Middle Ages for its Royal Free Chapel, named St. Mary de Barking. It was the burial place of Laud and of Kettlewell the non-juror. St. Andrew Undershaft, in Leadenhall Street, is worthy of a visit as the burial place of Stow the tailor and famous chronicler of London, who lived in Aldgate, and to whom there is a handsome monument. It was called "Undershaft" from the erection on May-day of a shaft or May-pole opposite the south door. Its former east window, now removed to the west end of the church, contains portraits of Edward VI, Elizabeth, James I, Charles I, and Charles II, and is usually styled "the Window of the Five Kings." The church of St. Olave, Hart Street, not far distant, gave sepulture to another worthy of literary fame, Samuel Pepys, the diarist, who lived in Seething Lane, and to whom, as recently as 1883, a monument was erected, his merits as an author and a citizen being duly set forth by Mr. Lowell the American Ambassador. St. Bartholomew the Great, West Smithfield, has an interest all its own as the oldest specimen of Norman church architecture in London. It has seen many strange sights in the neighbouring space, for it was in Smithfield that Bartholomew Fair was held; it was within its limits that the great cattle market was held until 1852 when the live beasts were transferred to Islington; and it was upon the same spot that the tournaments took place. The church as it now stands was once the choir of the monastery, and among its monuments, in addition to that of the founder, Rahere, are those of Rycroft the famous linguist, and Sir Walter Mildmay, Chancellor of the Exchequer in Elizabeth's reign, and founder of Emanuel College,

Cambridge. Close at hand in Newgate Street stands Christ Church, built after the fire from Wren's designs on the site of an old church belonging to the Grey Friars, and given for a parish church by Henry VIII. It is said to have been the burial place of Richard Baxter the Nonconformist, and the remains of Laurence Sheriff, the founder of Rugby School, rested under its roof until they were removed to Rugby. At St. Sepulchre's, on what is now known as Holborn Viaduct, a church which is said to be the largest in the city of London, was buried Captain John Smith, some time Governor of Virginia and Admiral of New England, whose grave is often made the scene of a pilgrimage by Americans. Bishopsgate Street has within its bounds a church—St. Helen's—noticeable as having escaped the Great Fire. It contains the monuments of Sir John Crosby, whose "Hall" is in the same street, Sir Thomas Gresham, founder of the Royal Exchange, and Sir Andrew Judd, founder of Tonbridge School. Still further east is Whitechapel Church, on the site of the little white chapel, erected in 1329, which gave its name to the parish. Attached to the Tower of London are the Royal Chapels of St. Peter ad Vincula, and St. John, with many traces of the connection existing between them and the neighbouring dungeons. The remains of Anne Boleyn and Catherine Howard were interred before the altar of St. Peter. The chapel of St. John is one of the finest specimens of Norman architecture existing in a fair state of preservation. St. Stephen, Walbrook, next to the Mansion House, has an architectural interest, as it is said to have served its purpose as a probationary trial before the master designed the dome of St. Paul's. The church of St. Lawrence Jewry is the burial place of Bishop Tillotson, some time a lecturer within its walls, and Seth Ward, the astronomer and mathematician, was one of its rectors. In the Strand the church of St. Mary, one of fifty new churches erected under the Act of Parliament passed in the 12th year of Queen Anne, stands near the site of an ancient fane which once numbered St. Thomas-à-Becket, then a deacon, among its rectors. Another interesting edifice is that of St. Clement Danes—so called from the burial in its yard of Harold's body after it had been disinterred from Westminster and thrown into the Thames; or else from the burial of a number of Danes massacred in the Metropolis; or else—for a third reason is given—from the synagogue, afterwards consecrated, built for the use of some Danes who married English women, and were compelled to live between the Tole of

Morne (now Westminster) and Caer Lud (now Ludgate). Within the present church worshipped Dr. Johnson, who sat in the first pew of the north gallery close to the pulpit, where the following inscription is to be seen on a brass plate :—

"In this pew,
And beside this pillar, for many years,
attended Divine Service,
The celebrated Doctor SAMUEL JOHNSON,
The Philosopher, the Poet,
The Great Lexicographer,
The profound Moralist, and chief writer
of his time.
Born, 1709. Died, 1784."

The brass was purchased by the inhabitants of the parish in 1851. Bishop Berkeley, immortalised by Pope as "having every virtue under the sun," was buried here.

Among other churches with distinctly literary associations may be named St. Giles's, Cripplegate, where we tread at once on classic ground. Bishop Lancelot Andrewes was among its rectors; John Foxe the martyrologist was borne to his burial within the Church in 1580 from his house in Grubb Street; Oliver Cromwell was married at its altar; Sir Martin Frobisher, the Arctic voyager, and John Speede the astrologer, were buried in its "God's acre;" and last, but not least, "John Milton, Gentleman," who died, according to the Register, of "consumption," was buried in the church on November 12, 1674. Within the parish also, in Tyndale's burial ground, now styled Bunhill Fields, were buried John Bunyan and De Foe.

Turning from the churches to the temples of the law we have in the Inner and the Middle Temple and the "Inns" buildings full of memories, legal, literary, and social. In Inner Temple Lane lived Dr. Johnson, while Crown Office Row was the birthplace of Charles Lamb, and near the Master's House is a monument which says, "Here lies Oliver Goldsmith." Within the Temple Church is a monument to John Selden, the Table Talker. Blackstone lived in the old Brick Court, with Goldsmith in the rooms above him, where, writes Mr. Hare, the author disturbed the learned jurist by "roaring comic songs, and by the frantic games of blindman's buff which preceded his supper parties, and the dances which followed." Edmund Burke lodged just within the Temple gateway, Cowper the poet had chambers in the Middle Temple in 1752, and Porson lodged in Essex Court. Serjeants' Inn and Lincoln's Inn, if less interesting, have many memories,

and Gray's Inn was the scene of Lord Bacon's composition of the "Novum Organum," while within its chapel the preachers have included Dr. Sibbes, the Puritan, author of "The Smoking Flax," Dean Nicholas Bernard, Chaplain to Oliver Cromwell, and Bishop John Wilkins the mathematician. In the bookshop of Tonson in Gray's Inn was published Addison's "Campaign." Within the precincts of the Inn studied Sir Philip Sidney, and Goldsmith lodged there before he took up his abode in the Temple. Furnival's Inn can boast of having given house-room to Charles Dickens, and it was in his chambers there that the idea of the "Pickwick Papers" was matured. At Staple Inn Johnson wrote his "Rasselas." Lincoln's Inn, as the abode of Thurloe, Oliver Cromwell's secretary, was often visited by the Protector, while among other notabilities connected with it may be named Sir Matthew Hale, and Antony, first Earl of Shaftesbury. The preachers in its chapel have included Tillotson, Donne, Heber, Maltby, and Maurice.

An inn of another sort, forming in fact a club and rendezvous for the clerics of the city of London, was Sion College, London Wall. We write *was* advisedly, for the fiat has gone forth for the sale of the buildings. This institution was originally a hospital or almshouse, but having passed through many reverses and several fires, it ultimately became little more than a library and clubhouse for the London incumbents. The college is to enter on new premises on the Thames Embankment, and thus another of the structural links with byegone times will have been severed, for although the building itself was of recent date the site had been occupied by the college for many centuries.

Among the most famous of the historic mansions of London, Northumberland House has been swept away, and the name only remains in the so-called Avenue, which is rapidly being filled with monster hotels on the American model, varied by rival clubhouses and the offices of religious societies. Somerset House, which carries us back to the time of the Protector, and which for sometime housed the Queens of England, now gives a home to the officers of the Inland Revenue Departments, the Registrar of Births, Marriages, and Deaths, and the custodians of Wills and Testaments. The noble mansions which have left their traces behind them in the streets named after the Cecils and the Russells are no longer to be found, but the Strand is still fully charged with great names, and Salisbury Street, Norfolk Street, Bedford Street, Russell Street, and Cecil Street,

remind us of the English noblemen who once lived in their midst. The neighbourhood of Covent Garden, sacred to Johnson, Boswell, Foote, Steele, and Dryden, to Sir Godfrey Kneller and Sir Joshua Reynolds the painters, Garrick the actor, and Radcliffe the founder of the Oxford Museum, was in their good old days famed for its coffee-houses, and Will's, Tom's, and Button's were the clubs of the literati. In this respect the streets adjacent to the market have still something in common with the masters who once walked along them, for they have become a veritable booksellers' quarter, and half the houses at least are given over to authors, journalists, and book vendors. In the adjacent churchyard of "the handsomest barn in England," as Inigo Jones termed St. Paul's Church, were buried many famous men, and among them Samuel Butler, the author of "Hudibras."

Greater than these, however, in literary fame is Shakespeare, whose connection with several London districts has been placed beyond doubt, for at Southwark it was that the Globe Theatre was situated, and the bard owned the Boar's Head in the High Street. On the eastern side of the metropolis he had a theatre on the site in Curtain Road, Shoreditch (hence it name), now occupied by St. James's Church; and it may be of interest to state that a stained window representing his "Seven Ages of Man" has just been presented to the church as a memorial of the incident. Coupled with Shakespeare we may mention Handel, the great Saxon, whose London career is commemorated by his munificent assistance to the Foundling Hospital, to which he gave not only an organ, but the produce of a performance of his *Messiah*, enriching the coffers of the institution with 7,000*l*. But space fails us to do more than name these eminent sojourners in the great city, and with the mention of them our jottings must be brought to a close. If the defenders of our ancient monuments cannot arrest the destruction which has already almost swept away the past of the city as far as many of its public buildings are concerned, it may still be possible to preserve something of the sympathy which joins past and present together; and in any case the memories we have recalled cannot be destroyed, rather they deserve to be treasured with all the greater care and affection when we feel that we are but dealing with—

"The touch of a vanished hand,
The sound of a voice that is still."

CHARLES MACKESON.

TECHNICAL EDUCATION.

ENGLAND has long held without question the reputation of being the first manufacturing country in the world; but of late years some of her Continental and Transatlantic neighbours have been pressing her very hard, and their competition becomes more serious every day. We constantly hear it bemoaned that this or that industry is leaving its old home in England and becoming located in America or on the Continent. And although these complaints may be, and probably often are, much exaggerated—and that this is so is shown by the fact that in these very same industries a corresponding complaint reaches us from our neighbours that they are losing their trade by its transference to us—we cannot shut our eyes to the fact that foreign industries are undoubtedly encroaching on our own, and that it will need the employment of all our energies and resources if we are to maintain our place as leaders in the industrial world. It behoves us, therefore, to consider most carefully the whole subject of our industries as compared with those of foreign countries, in order to find out in what respect we may learn of our neighbours, and what are the best and most important steps for us to take to enable us to keep the lead amongst manufacturing and mercantile nations.

On a comparison of our industries with those of Europe and America, we notice abroad four principal differences: i, longer working hours; ii, lower wages (except in America); iii, so-called protective duties; and iv, different education and training. It is with the last and really most important of these four subjects that this article is principally concerned, although we shall have incidentally to touch on the other three.

In olden times, and even up to a recent date, before any man could practise any business or handicraft, he was absolutely obliged to serve his apprenticeship, or, in other words, to serve for a stated time, generally seven years, under some acknowledged master in the trade which he wished to take up. This was, in its time, probably the best preparation for his future life that a handicraftsman could have. The master himself worked in his workroom with one or two assistants and apprentices; all the various branches of his trade were carried on under one roof; and the apprentice in constant communion with

his master, and surrounded by, and regularly witnessing all phases and branches of his craft, imbibed at the same time the general education and tone of his class and age, and the technical knowledge and manual dexterity necessary for the successful carrying on of his work.

But the introduction of machinery and steam power has necessarily changed this state of things. Want of the capital needed for the erection of the necessary machinery has compelled many, who in the olden times would have become masters, to undertake the post of assistant to their wealthier brethren; and thus those wealthy enough to be masters find themselves at the head of establishments, with numerous assistants under them; and their time is no longer spent in personal manual labour at their craft, but must, in great part at least, be used in supervising and directing the labours of their assistants. And with the increased development of machinery this change has become, and is daily becoming, more and more marked. Workrooms have grown into factories, and trades have become subdivided, so that what two or three hundred years ago was one craft now usually forms several, and sometimes a great many distinct trades. But under these entirely altered conditions the old system of apprenticeship has become quite inadequate as a means of efficient training. The apprentice of the present day—if we except some of those paying very heavy premiums under the express condition of receiving instruction in their trade or profession—finds himself in a large factory or workshop, amidst bustle and noise, where it is nobody's business to give him instruction, and where he is left to "pick up" what information he can, as best he may. As an instance, we may take the reply given by a foreman in a large Government engineering workshop to the question whether it was the business of foremen to teach the apprentices and see that they did their work efficiently:—"Yes, if you let me alter the word *business* to *duty*. It is our duty, but we cannot make it our business. We haven't the time. The pressure upon us is too great to do it properly; besides which, with all the noise and hurry going on around us, it is very difficult either to explain things to the lads, or for them to understand. There I was trying the other day ever so long to make an apprentice and a young journeyman understand how to cut a worm-wheel, and had to give it up at last" (see "Technical Education," by Rev. H. Solly, "Nineteenth Century" for August, 1884). Add to this the fact that in many cases the work in progress is

confined to one small branch of a trade—or, if not, that in most cases the apprentice is kept at one such branch—and we shall see that the knowledge and technical experience he will have attained at the expiration of his time is sure, in the majority of cases, to be far from satisfactory. That this is so is shown by the great decline of late years in the custom of binding apprentices. But although the old plan of apprenticeship has thus become inadequate to the needs of the present day, we in England have only lately awakened to the need of supplying some other means of training, for our industrial population, which shall more adequately meet the requirements of the age. And there is little doubt that the steady advance, in competition with us, of foreign nations is due to their earlier perception of the need of such training, and of making provision for it.

Of late years, however, a move has been made in the right direction in England. Classes and institutes have here and there been established, having for their aim the provision of technical training for workers in one or other industry, and we have watched the gradual development of an important institution founded by the Corporation and Trade Guilds, or Companies of London "for the extension and improvement of technical education, primarily in London, and, in the second place, throughout the country generally." It is hoped that this may aid in consolidating existing technical schools, and form a nucleus for the dissemination of technical education throughout the land. With this aim it was decided to make the following the scope of the Institute:—i. The foundation of a Central Institute for Technical Education. ii. The establishment of, or assistance to, Trade Schools in London and the provinces. iii. To hold technological examinations. iv. To make grants in aid of existing institutions.

The present moment, when this Central Institution of the "City and Guilds of London Institute for the Advancement of Technical Education" is just completed, and is shortly to be opened to students, is a fitting time to consider the character of the training best suited to attain the end in view, more especially as the Royal Commission on Technical Education, appointed three years ago, has just placed in our hands, by the issue of its Second Report, the means of ascertaining the character and extent of the various systems of general and technical education which have been adopted by foreign nations.

Mr. Solly, in the article already quoted, says:—"Technical

education is that specific training and teaching required to fit a person for any trade, profession, or other calling in life, over and above that general education which every person ought to possess according to age, sex, and other circumstances. Hence it is needed as much by lawyer and doctor, housemaid, ploughman, soldier, gardener, and cook, as by carpenter, bricklayer, bookbinder, or tailor." We may safely accept this as a fair definition of technical education properly so called, but we must not forget that the line of demarcation between general and technical training is scarcely a rigid one; that if technical education is to be of real service it must have a really sound general education to build upon. We must not be content, therefore, with the establishment of schools, classes, and institutes for special technical training, but must also take care that the primary or general education given to pupils *before* entering the special technical school is of a sufficiently sound and broad character to enable them to draw the fullest possible benefit from their after technical training.

In the consideration of any scheme of technical education we may divide the population to whom such education is to be given into three broad classes, for each of which separate and distinct provision must be made: *a*, those belonging to wealthy families, who can afford to spend several years on a long and costly education, with the aim of at once entering into the highest ranks of their profession or trade; *b*, those to whom their parents are willing to grant a training extending over two or three years, and who will generally take a medium station in after life, becoming foremen, assistant managers, and so on; and *c*, the children of the working and poorer classes, who must be educated to become efficient working men and women, with the least possible expenditure, on their own and parents' part, of time and money.

Turning first to the consideration of class *a*, requiring the highest possible technical education, we see that on the Continent great provision has long been made for its wants. We find on the one hand a large number of very active and numerously-attended "high schools," or universities, and on the other an equally large number of institutions bearing various names, but all of which we may term, "technical," universities or high schools. In the first of these the teaching given is, professedly and strictly, of pure science and philosophy; in the second it is all arranged with a view to its bearing directly on the future pro-

fession or trade of the student. But even here the difference is, in a great measure, more apparent than real, for in the medical, and, to a less extent, in the legal faculties of the universities, the teaching is distinctly of a technical character. These two classes of institutions produce by far the largest proportion of the highest class of professional and technical workers, and it will therefore be useful to enquire as to what experience has shown to be the relative value of the two trainings in regard to the aim we have at present in view. In reference to medicine and law the university teaching is of a sufficiently technical character, and no further provision is made for them. With regard to trades opinions differ. In the more strictly chemical trades—such as the colour industry, alkali manufacture, &c.—the general opinion seems to lean towards a university education. And here we must notice the much greater prominence given to scientific knowledge in Continental chemical works than in our own. In Continental works we find the managers and departmental managers to be, in almost all cases, thoroughly competent and highly-trained scientific chemists, who, in the words of the Royal Commission, are "cognisant of, and able to make use of the discoveries emanating from the various scientific laboratories of the world." These chemists have all passed through a long and thorough course of pure chemistry, including—and this is a most important point—scientific research; and the number of these chemists is in almost all cases much higher, in proportion to the size of the works, than would be the case in corresponding establishments in England. To quote a single example, the firm of Meister, Lucius, and Brüning, at Höchst—which owns one of the largest colour works in the world—has in its employ fifty-one scientific chemists, in addition to fifteen well-trained managers and engineers; and about half of those chemists are employed purely in carrying out investigations in connection with the chemistry of colours, and have nothing whatever to do with the routine or manufacturing part of the business. And that this plan is satisfactory from a commercial as well as a general point of view is clearly proved by the fact that, although England was the cradle of the colour industry, and for some time held an almost complete monopoly of it, this industry has latterly made such gigantic strides in Germany that it now probably exceeds, or at least equals, our own.

In his presidential address delivered to the Chemical Society last March, Dr. Perkin, the founder of the coal-tar colour

industry, whose personal experience as a chemical manufacturer extended over many years, and whose general knowledge of the chemical works of England and the Continent is very large, says, speaking of this subject :—

"Of late years much attention has been given to the subject of technical or applied chemistry, and it is to be hoped that this movement will be so judiciously carried on that much will be done for perfecting and developing the chemical manufactures of this country; but it appears that there is an idea in the public mind that there are two kinds of chemistry in existence: one suitable for the manufacturer, and the other suitable for the scientific man; and unless this idea can be successfully eradicated it is to be feared that much of the value of this movement will be lost, and we shall be left in the position of followers, instead of leaders; copyists of what others are doing, instead of being originators of new processes and industries.

"In the present state of things, students who are to be manufacturers are supposed to know enough chemistry when they have acquired a knowledge of ordinary analytical methods, and the result is that we have but very few efficient chemists in our works. On the Continent, however, we find a very different state of things: first of all in their chemical works they usually have a much larger staff of chemists than we do, and secondly their chemists are efficient men.

"The chemists preferred in Germany are those who have had a thorough training, and taken their degree of Doctor of Philosophy, and shown their power as chemists by conducting original research, and, in many cases, have been for some time assistants to the professors in their research laboratories. Those from the Polytechnics (technical universities) are not so much valued, except in relation to their knowledge of engineering, mechanics, &c.

"What do we see as the result of the employment of high class chemists in Germany? First, we notice that chemical industries are developing and increasing there more than in any other country; and secondly, that the manufacturers are able to make their products in a very economical manner, and, as a consequence, supply them at a low price. Men who have studied chemistry sufficiently to do analysis and look after existing processes which are well known, are certainly useful in their way, but we want more than this; we want men who have had their minds so trained by carrying on research that they may be imbued with a spirit of investigation, and be able

to improve or entirely change processes in use, and to keep up their knowledge of chemical science, so as to be able to grasp the importance of new scientific facts, and make them subservient to the industries they are engaged in.

"The chemists from the German Universities when entering chemical works naturally have but little knowledge of technical processes. This they have to acquire, but unfortunately they are then only likely to see those operations which are carried on in the particular industry to which they become connected. Those who study in the Polytechnics have a certain advantage in this particular, inasmuch as they can become acquainted with processes carried on in a variety of manufactures; and what is wanted now-a-days is something like what would result from a fusion of the work of the Universities and the Polytechnics, *i.e.*, scientific training similar to that in the former, with a general knowledge of engineering, mechanics, &c., and the methods adopted in carrying on processes on the large scale, this latter not being confined to one industry only, but also extended to industries in general, so that great breadth of knowledge may be acquired. With men so trained we might expect to see our chemical industries flourish, and keep at least abreast of those on the Continent.

"It is to be hoped that some such standard of training will be undertaken at the Central Institute of the City and Guilds of London. It would be a sad thing to find the munificence of the City Companies resulting only in perpetuating the present kind of imperfectly trained chemists, who are incapable of advancing the chemical industries of this country, so that our manufacturers not unfrequently find it necessary to send to the Continent for more competent men."

The teachings of the Second Report of the Royal Commission on Technical Education coinciding so closely as they do with the above opinions of an eminently practical man, render these opinions all the more important and convincing. One instance may be quoted, by way of example, of the great value, from a commercial and general point of view, of the highest scientific research. About two years ago Emil Fischer discovered an alkaloid derived from quinoline, which was found to have febrifuge properties almost if not quite equalling those of quinine. It is now being manufactured at Höchst under the name of kairine at the rate of about 22 lbs. daily. In reference to this the Royal Commissioners write: "It is not impossible that this

artificial product obtained from coal-tar may be the means of supplanting altogether the natural alkaloid . . . . it will then add another and most striking example to the numerous ones which already exist, of the immense importance to the human race of researches in purely scientific organic chemistry, which, at one time, appeared to have no practical value or possible application. It may, therefore, serve again to point the moral, which cannot be too strongly insisted upon, that it is only by the highest and most elaborate achievements of pure scientific investigation that the greatest practical advantages to mankind can be secured." All that has just been said in regard to chemical industries is equally true of other industries. We rejoice to say that the scheme for the organisation of the City and Guilds Central Institution lately issued by the Council, makes a prominent feature of the teaching and carrying out of the highest branches of pure science, and it is most earnestly to be hoped that this attempt at combining the best features of the two Continental systems may prove a practical success.

Passing now to the consideration of the needs of class *b*, we find that here again our Continental and Transatlantic neighbours are far in advance of us. Whereas in England the institutions giving a technical education suited to the wants of the middle classes are very sparsely dotted about, we find them on the Continent in almost every town, and often in what we should be inclined to call villages. And this start which our neighbours have obtained over us has not been without its results. The Commissioners found that now "there are scarcely any Englishmen to be found at the head of German workshops," whereas "in earlier days the Englishman was completely master of the situation." "During recent years there has been less and less demand for English foremen on the Continent, where practical knowledge has increased, and more and more demand for Continental men of science in England." And this, it must be remembered, in spite of the great drawback under which Germany is labouring—at least from an industrial point of view—in its military service. The young artisan who is just becoming efficient is taken away from his work at 20 years of age for three years' service, at the end of which time, even if he have not—as is often the case—fallen into unsettled ways, he has at least lost a great deal of the technical skill and knowledge he had previously acquired. Other things being equal, there can be no doubt that a compulsory military service such as this must act as a terrible

drag on the industries of a nation. The evidence on this subject of education of "an English manager of great intelligence and experience" whom the Royal Commissioners found at the head of a large engineering establishment in Bavaria, is most instructive and interesting. His own education, "which was superior as a youth to that of most English workmen, had been lamentably deficient compared with that of young Germans; and his sons, in the common schools, have received an education which they could not possibly have obtained in England." "Give the English workman," said he, "the same schooling as the German, which will improve him both as a mechanic and as a man; keep him from soldiering, and teach him to avoid drink, and no workman in the world will have a chance against him . . . . keep your shops, and follow the Germans in scientific teaching: English industries will then take a new lease."

A great advance has been made within the last few years. The Finsbury Technical College and South London Technical Art Schools of the City and Guilds Institute, the technical classes now held at the Polytechnic Young Men's Christian Association and other institutions in London, the Technical Institutions (either on an independent footing or as branches of existing colleges) at Bradford, Leeds, Sheffield, Huddersfield, Coventry, Keighley and other places, all show that the value of such institutions is beginning to be felt; and it is satisfactory to see that it is not only the manufacturers and educationalists who are realising this need, but also the workmen themselves, as is evidenced by their having held several meetings lately in different parts of the country for the purpose of advancing the cause of technical education.

It will be impossible, within the limits of this article, to discuss in any detail the kind of training to be offered at these institutions. The great aim of the training should be to give a man a sound knowledge of the fundamental principles underlying the trade or profession he is intending to make his own, a thorough acquaintance with the machinery and details thereof, together with the greatest possible technical skill. But care must be taken not to make him too much of a specialist, but rather an "all-round-man" with a speciality. There are almost always a great many highly skilled artisans out of work only because they are too much of specialists. Their own particular branch is at the moment overstocked, or, it may be that the

introduction of a new piece of machinery has suddenly greatly diminished the need for their kind of skill, and they are unable to turn to anything else. We see this provided for in many of the foreign schools: the students only being allowed to specialise their training after a certain course of more general work. Thus the student who, for instance, is eventually to be a forger and fitter, will in his earlier stages go through a course of, perhaps, modelling, carving, and joining work. There is great difference of opinion as to the relative time which should be devoted in such a training to theoretical teaching on the one hand, and on the other to strictly technical training, meaning by the latter actual practical work and the attaining of great manipulative skill. In some institutions the laboratories are fitted up with all the machinery of a first class factory and the work turned out by the student is such as might do credit to any such factory; in others, the actual practical work is arranged more to illustrate the principles of manufacture, the high finish of the articles being considered of less importance, as it is thought that the student will get his final polish, so to speak, when he goes into the factory. Both systems seem to work well, but there is the fear that unless a longer term of study can be obtained under the first named method, the great amount of time needed to attain such high technical skill will tend to trench unduly on the time which ought to be devoted to more theoretical studies.

But there is one point on which all seem to agree, and that is the necessity of giving drawing a very prominent part in *all* technical education from the highest to the lowest. Of course in the art-industries, such as carpet-weaving, and all decorative trades, this need is self-apparent, and a moment's consideration will show that it is almost as necessary in other industries. Naturally the character of the course of drawing will vary with the industry aimed at, an engineer requiring mechanical and perspective drawing, a carpet-weaver and designer, artistic and decorative, and so on. But in all cases a general training in drawing is most valuable and essential.

Another point, which cannot be too strongly insisted upon, is the necessity of having good museums and picture galleries, available both for the students and for those actually engaged in industrial pursuits. The educational value of museums and picture galleries can hardly be over-estimated: they are to the artist and practical man what the library is to the literary man: they are as valuable for general as for technical education. The technical

worker is able to trace the gradual development of his industry, and often in thus studying what has been already done obtains suggestions for new improvements or inventions; the carpet-weaver or calico-printer, in studying all the old patterns of his own and allied industries, and in seeing the objects of art round about him, is materially assisted in inventing new patterns. All evidence, both English and foreign, tends to show the influence for good which a first class museum exerts on the industries, and particularly the art-industries of a neighbourhood. And, finally, almost everyone who has been educated in close proximity to a good museum and picture gallery, with full and unrestricted entry thereto, will readily admit the general refining influence which these have had upon the mind.

Turning to the needs of class *c* as to technical education, it will not be necessary to be more than very brief. All that has been said with regard to class *b* will hold good here, the difference being one of degree rather than kind. The training must extend over a shorter time, must probably begin at an earlier age, and be on the whole, especially as regards the theoretical instruction, of a somewhat lower standard. The full-time education will have, as a rule, to cease at about 14 years of age—often even earlier—but this should be supplemented by evening classes at which the youth's education may be continued. These evening classes are especially important, as enabling the present race of workmen in some measure to make up for the deficiency in their early education, and also for those who, from any reason, are unable to attend the day schools. Continental experience has shown that as the advantages of the early education have become more appreciated the need for the more elementary evening classes has decreased.

Another matter of great importance is that of enabling students of promise in the lower grades to rise by the aid of scholarships, free training, &c., to the highest; but as this is now fully recognised on all hands, no more need be said.

Much has been said about the long hours of work on the Continent as handicapping manufacturers in England where the time of work is limited by statute. But the Report of the Royal Commission shows that manufacturers there are in many cases beginning voluntarily to shorten their hours: the long hours soon begin to tell on the workmen's health, and the rate of work is diminished. The opinion was more than once expressed that the English workman, owing to his longer rest and recreation

hours, comes fresher to his work than his Continental brethren; and is thus enabled to do as much work in his 8 or 10 hours as they in their 10 or 12. In a similar way there is a growing tendency not to employ boys and girls younger than about 14 years of age. The difference of wages between the English and foreign workmen is also in great measure counterbalanced by the much better physique—and consequent quicker rate of working—of the former, due to his richer style of living. The question of protective duties is of course far too wide a one to be discussed here; but even allowing—what is by no means proved—that they are really beneficial to certain industries, they undoubtedly weigh very heavily on the poorer classes by making the necessaries of life dearer.

Want of space precludes the specific consideration of the needs of the agricultural population and of women, but all that has been said above is equally applicable here.

There can be little doubt that the thing that is needed for English industries is better general and technical education. Abroad, both in America and on the Continent, enormous sums have been spent on technical education. The Right Honourable A. J. Mundella, speaking of the Continent at the opening of the Textile Dyeing Department of the Yorkshire College, Leeds, at the end of 1880, said: "I have stood in an industrial town of 70,000 inhabitants in which a single building that has been erected within the past three years solely for teaching science as applied to industry had cost £100,000. I have stood in three or four such towns." He had stood "amazed and almost aghast" at the progress technical institutions on the Continent had made since he was there five years before. "If we are to hold our own," he said, "we must not lose a point; we must not neglect a single opportunity; we must not rest content on our old prestige; but we must as Englishmen look the difficulty in the face, and, where weakness exists, strengthen ourselves; and this weakness is to be found entirely in the question of education which we have too long neglected."

Since that time we, too, have happily made great progress, and that progress will, it is to be hoped, be still greatly increased in the course of the next few years.

In 1832 some of the manufacturers of Mulhouse, in Alsace, formed themselves into the "Industrial Society of Mulhouse," for the purpose of the "advancement and the encouragement of industry, by bringing together in a central position a great number of

facilities for instruction ; by the communication to its members of discoveries and remarkable facts, and of the developments to which they have given rise ; and by all the means which can be suggested by the zeal of the members of the association for assuring its success." So well have the members carried out their objects, and so great has been the support accorded to the Society from time to time by inhabitants of the town, that there is probably not another purely manufacturing town in the world which possesses such educational advantages. Mulhouse possesses infant, primary, and adult schools, schools of drawing, weaving, and spinning, a Hebrew school of arts and trades, a professional school, a college, an upper school for applied sciences, public classes, a popular library, literary and scientific lectures, and an exceedingly fine and extensive museum and picture gallery. All these are connected more or less directly with the Industrial Society, and the museum contains, among other things, probably the finest and most complete collection of patterns of calico prints, cretonnes, &c., extant. Annual members pay 2*l.* 8*s.*, life members 40*l.*, and its members number from 600 to 700. Its accumulated funds, including numerous bequests, amount to 160,000*l.* The Society has also established a "Workman's City" of over 1000 freehold dwellings, the whole being connected with the town by tramways. The cottages cost about 160*l.*, and are paid for by weekly instalments extending over 15 years. This Society has been instrumental in no small degree in raising Mulhouse to the front rank among European cities, and is a splendid example of what can be done by properly arranged educational advantages. We are now witnessing the start, in the City and Guilds of London Institute, of a Society resembling to some extent the Mulhouse Society in its formation and objects, and we cannot but sincerely hope and trust that it may have as successful a career in the future as the Industrial Society of Mulhouse has had in the past.

L. T. Thorne.

LOCAL AND MUNICIPAL GOVERNMENTS.

"ENGLAND alone among the nations of the earth has maintained for centuries a constitutional polity, and her liberties may be ascribed above all things to her free local institutions. Since the days of their Saxon ancestors, her sons have learned at their own gates the duties and responsibilities of citizens. Associating for the common good they have become exercised in public affairs." Such is the testimony of Sir Erskine May, and such appears to be the lesson of our English history. It is, however, only one factor in the production of our political liberties, for the continued existence of the village communities of India is enough to show that complete municipal self-government does not necessarily bring with it the possession of, or the aptitude for, political freedom, as the villagers have governed themselves for centuries under a succession of foreign conquerors, who have excluded them from any share or voice in the general government of the country.

Historically we must seek for the origin of our system of local government in these village communities, which have existed for thousands of years in India. These communities were, and are, bound together by ties of relationship, sometimes vague and sometimes perhaps fictitious. They held land in joint ownership, any individual rights or possessions were subject to the general needs of the community, and the lands might be periodically reapportioned. The taxes exacted by the central government were paid not by the individual, but by the community. With a certain amount of individual liberty, the basis of the society was socialistic. The headman of such a village possessed and possesses great power and influence; he is not merely magistrate and mayor, but chief of the clan and its representative in all dealings with the external world. The Council of Elders assisting him have also grave responsibilities and great powers. In these officers of the village communities we have the germ of the English system. From the Teutonic "mark" there has been evolved the English parish or township, and these in varying forms have been transplanted to American soil. England even to-day contains many customs and traces of former customs that can only be explained by reference to the primeval type of the Aryan community. Private ownership of land

has been the rule for centuries, and yet commons and "shifting severalties" remain to testify of a time when the householders had only an associated right. The guilds of the middle ages and the trade-castes of India have also historical relations which need to be investigated. A survey of the rise of local government would be archæologically of great interest, but it remains a curious fact that our English methods of to-day rest entirely upon statute law. Doubtless, in a certain degree, the law has merely recognized existing institutions or tendencies, but in other cases there have been distinctly new creations. The broad basis of our local institutions is the representative system. In the beginning it was not so. What in the great boroughs are still called "town's meetings" are merely survivals of a time when all the inhabitants of the township were summoned to an open air meeting to consider what steps should be taken for the abatement of nuisances, the repair of roads, or for any other measure intended for the benefit of the district. This plan, however well fitted for the infancy of society, soon becomes impracticable, and hence arises the system of delegated authority by which the people select those whom they deem to have the ability, leisure, and public spirit essential for the service of the community.

There is a striking exception to this representative basis in the county government of to-day, which is chiefly in the hands of the magistrates who are, theoretically at least, the nominees of the crown. This, bad as it is, has been productive of less evil than might have been expected, because many of those in whose hands the power has been placed are precisely those whose presence would have been looked for upon any elected board. They would, however, be stronger in a representative capacity, and they would have with them the delegates of interests now ignored. The exclusion of this principle from the counties is largely accidental, and will no doubt be remedied at the earliest opportunity. It must, however, be admitted that the difficulties in the way of framing county boards are very considerable.

The most striking feature in English local government, and also its most striking defect, is the number, diversity, and conflicting areas of the different bodies created for the several departments. Mr. William Rathbone, M.P., once mentioned that where he lived thirty-five different local authorities had more or less sway. From the last census it appears that there are 52 counties in England and Wales, 239 municipal boroughs,

1,006 urban sanitary districts, 577 rural sanitary districts, 41 port sanitary districts, 853 burial board districts, 649 poor law unions, 14,946 poor law parishes, 70 Improvement Act districts, 424 highway districts, 5,064 highway parishes, 2,051 school board districts, and about 13,000 ecclesiastical parishes. This chaos has arisen from the English habit of piecemeal legislation, by which no institution is touched by way of improvement until there is a danger of its falling to ruin, and then only as little as possible, in the way of patching, is done. There is a good side even to this habit, for if progress is made slowly and unsymmetrically, there is little danger of any sudden reversal of policy or system. The English citizen is liable to eighteen different kinds of local rates, and there are 27,069 governing bodies to look after him.

The administration of justice is a part both of local and general government, and there are police divisions, petty sessional divisions, county court districts, counties, and circuits. The experimental rearrangement of assizes and the call for "continuous sittings" in Lancashire are evidences that this part of local government is not equal to the strain it now bears.

Mr. R. S. Wright has given a concrete example of the existing confusion of authorities and areas. "The inhabitant of a borough," he says, "lives in a fourfold area for purposes of local government, namely, in the borough, in a parish, in a union, and in a county; none of these are conterminous, unless by accident, with any of the others; and different parts of the borough are or may be in different parishes, and in different unions, and in different counties. He is or may be governed by a sixfold authority—the municipal council, the vestry, the school board, the burial board, the guardians, and the county quarter sessions; all these are different bodies, and inhabitants of different parts of the same borough are or may be under different vestries, burial boards, guardians, and quarter sessions. He is or may be subject to a borough rate, a general district rate, a poor rate, a burial rate, and a county rate. The inhabitant of a local board district also lives in four kinds of districts—the local board district, the parish, the union, and the county. He is or may be under six governments—the local board, the vestry, the union, the burial board, the quarter sessions, and the school board. Moreover, any of these districts or authorities, except the local board and its district, may be different for inhabitants of different parts of the same local board district. There is a case

of a farm of 200 acres, in Gloucestershire, which some few years ago was in twelve parishes, and subject to about fifty rates.

"The inhabitant of a rural parish lives in a parish, in a union, in a county, and probably in a highway district. He is or may be governed by a vestry, a school board, a burial board, a highway board, the guardians, and the justices. There are a multitude of minor matters in respect of which the districts, authorities, and rates are or may be additionally multiplied and complicated in all the above cases."

The parish may be regarded as the central idea of English local organization, yet it is impossible to define the word exactly apart from its ecclesiastical use. Its boundaries are matters of custom and tradition, kept alive by the process of annual or triennial perambulation. Many parishes are divided by land belonging to other parishes. A parish has been mentioned in which there was only one ratepayer. This individual would be the only person eligible for a wide variety of honorary offices. Although large parishes may be subdivided there is no process by which the smaller ones may be amalgamated. Yet consolidation is clearly needed in many cases. The "civil" parish is generally the area ruled by the guardians of the poor, but there are also land-tax parishes and highway parishes, in addition to the old ecclesiastical parish. The boundaries of these are not necessarily conterminous, and in practice are rarely so. Historically the parish is the ecclesiastical name for the township, but the rise of feudalism had obscured the importance of this primary unit, and when the division of the kingdom into parishes was completed, about the thirteenth century, the vestry and the manor courts had assumed many of the functions of the earlier township organization. The court baron, court leet, port moot, and similar bodies under varying names, exercised many of these legislative and administrative functions of the modern authorities. The rights of the manor were generally defined by charter or custom, and matters that lay outside came to be transacted at the vestry, which thus became a partly civil and partly church institution. When the foundation of the present poor law was laid by Elizabeth, the churchwardens were named as *ex officio* overseers, and the others were to be chosen for each parish. This was a wise provision for the time, seeing that the parish was then more general and representative than the manor, which was even then in decay, and is now practically extinct. Causes have, however, been at work which have dissociated the civil

and the ecclesiastical parishes. The necessities of the church, especially in the present century, have led to subdivisions. The old church parishes, in the north of England especially, were of enormous size, and the increase of population has led to a multiplication of churches and consequent narrowing of boundaries. Again, both by custom and legislation, some townships became entitled to separate overseers. Detached portions and parishes have been joined to their nearest neighbours. As a result of these and other causes the civil parish in many cases has no connection with the ecclesiastical parish, even when it bears the same name. Most of the administrative functions have now been taken from the parish, but it still remains the unit for taxation and for electoral purposes. A Common Vestry is a meeting of ratepayers. A Select Vestry exists either by custom or in accordance with Hobhouse's Act, since repealed, and the number is fixed at twelve for every thousand ratepayers. The vestry has the management of the parish property, may adopt certain permissive acts, has the appointment of the first burial board, and can regulate the lighting. In the civil parish the main work is discharged by the overseers, whose appointment is ratified by the justices. Their chief duty is the making and levying of the poor rate, but they have also to prepare and publish the lists of voters, jurymen, &c. The valuation list is settled by the Union Committee. Rates are levied only upon lands, houses, and mines, and not upon personal property. There are provisions by which owners can compound for the payment of the rates of small houses. The poor rate is often a misleading term, as a variety of objects other than the relief of the indigent are subsidised from it. The ecclesiastical side of local government is very curious. All persons are still theoretically members of the National Church, but "church rates" are no longer recoverable by legal process. The clergyman has certain functions to perform by virtue of his office in relation to the parish. He is the registrar of baptisms, marriages, and burials at his church. The Burials Act of 1880 gives all parishioners a right to burial without the intervention of the clergyman. A still later Act is directed against the old plan by which the body of a suicide was buried at cross-roads instead of in a burial ground. The churchwardens are elected annually, and are chosen by joint consent of minister and people. In case of difference the minister names one and the vestry the other. Dissenters and Roman Catholics are eligible for this office, but

may execute it by deputy. Churchwardens are to see that the church building is in proper repair. When funds are needed they may summon the vestry to lay a rate which they cannot enforce. The powers of the churchwardens are in practice much smaller now than in former times. The same remark applies perhaps with even greater force to the parish clerk. At Manchester the appointment of this functionary rested not with the vestry but with the important family of de Trafford, who for two centuries have been Roman Catholics. In 1844 it was made legal to appoint a curate to perform the duties of parish clerk. The sexton is usually an elective office, and the vestry may, if they like, appoint a woman. Further, women ratepayers may vote in the election. Women are legally eligible for most posts in connection with local government, and it is perhaps remarkable that they do not more frequently occupy them. The experience of school board elections shows that they are less frequently defeated than candidates of the stronger sex.

Next to the parish comes the Union, which is usually an aggregation of parishes, but sometimes, in spite of its name, a single parish. There are over 600 unions and twenty-five of them are single parishes. The Poor Law dates from the first year of the seventeenth century, but parochial mismanagement had brought about an unendurable state of things, and after much fierce controversy and opposition the "New Poor Law" of 1834 was enacted. The Central Poor Law Board then created has, since 1871, been a part of the Local Government Board. This central board has great powers both in forming and controlling the unions. It has a veto on the appointment of officers and can remove them in spite of the guardians. What, with these limitations, must be called the governing body in the Union is the Board of Guardians. The magistrates resident in the Union are guardians by virtue of office, the remainder are elected by the ratepayers, in some places annually and in others triennially. Nothing can be less satisfactory than the method of election, which is by voting papers left at the houses of the electors. There is no sufficient assurance against tampering with these votes, and an abundant harvest of scandals has been the result. The large ratepayers are allowed a plurality of votes. The duty of the guardians when elected is to relieve the poor who are in want. This is an exceedingly important function, and one which involves questions of policy that have been very warmly contested. The vice of the old system was that it operated as a

rate in aid of wages. The workman was not paid the market-value of his labour, but the insufficient pittance was eked out by the guardians either in money or in kind. The demoralisation thus produced may be imagined. It kept the labourers in a state of abject poverty and subjection that differed from serfdom only in name. The guardians have now to decide whether out-door relief shall be given or the applicants shall be offered the shelter of the workhouse. English people, even of the very poorest class, have an almost morbid dislike of the "Union," or the Bastille as it was nicknamed. This sometimes springs from the worthiest motives, and sometimes from sentiments that will not bear examination. But for good or evil the sentiment is strongly rooted, and every now and then is emphasised by the death of some unfortunate who has preferred to starve in the garret of some horrible slum rather than eat the bread of a pauper in the workhouse. The English law is perhaps the only one in the world which guarantees the right to live to all, but it can only do so on strictly defined conditions. The general policy of poor law guardians should be in the direction of abolishing out-door relief, but this rule cannot be rigidly enforced without considerable reservations. There are isolated cases, both in town and country, where a little out-door relief may prevent the break-up of a household and also prevent the burden of an entire family being thrown upon the rates. When out-door relief is granted a further question arises, whether it should be given in money or in kind. Here, again, though no rigid rule can be wisely adopted, the relief in money should be given only in exceptional cases. Money given for the purchase of food has a dangerous tendency to be expended upon beer and gin. The total cost of poor relief in 1882 was 8,232,472*l*. The number of persons relieved was 803,381, of whom 193,899 received "indoor relief." Besides the relief of the poor, the guardians have various other duties. The Assessment Committee revise the rateable valuations made by the overseers. Where there is no School Board they are a School Attendance Committee. Even where there is a School Board the guardians have to pay the school fees of children whose parents are unable to pay for their education. In rural districts they are the Sanitary Authority. They appoint the registrars of births and deaths. They have to enforce the Vaccination Acts and the Bakehouse Regulation Act; indeed, the tendency of recent legislation has been very greatly to increase the extent and laboriousness of their duties, until the post is one

from which many shrink who would be willing to make a less onerous sacrifice of time. When some statesman has the courage to introduce system and order into the present chaos this is a matter which will demand attention.

The entire kingdom is mapped out into poor law districts. In the same way it is mapped out into sanitary districts, with the considerable exception of the metropolis. This division only dates back to 1872. Sanitary science is but of recent creation, and its theories are by no means settled. But even in its present empirical state we know that over-crowding, impure air, insufficient or polluted water-supply, adulterated and diseased food, &c., are causes of disease and death. The congestion of population gives additional importance to these considerations, and the difficulty can only be met by the representatives of the community. The right to protection from nuisances injurious to health has long been recognised by the law, and the old-fashioned court-leets framed and enforced many excellent regulations against "noisome" trades. Various fragments of sanitary legislation are in the statute book, but the Public Health Act of 1848 was the first attempt to grapple with the entire problem. The Central Board of Health then created is now merged in the Local Government Board. The Public Health Acts are codified by recent legislation. In boroughs the town council is the sanitary authority, otherwise the general type is that of a "Local Board." The members are elected by the ratepayers, but non-resident owners have a right to vote by proxy, and there is a system of plural voting, so that one person *may* possibly have a dozen votes. There is also a property qualification for membership. The election is by the unsatisfactory plan of voting papers. The Board must have a Medical Officer of Health and an Inspector of Nuisances. It has the regulation of the sewers, of cellar-dwellings and lodging houses, and it can either prohibit or regulate noxious industries. It has powers to deal with infectious diseases, but the power is very little exercised. It can build hospitals or join other authorities in their erection. A missing link in our sanitary system is a method by which those who cannot afford the entire expenses entailed by an infectious illness, might yet contribute on a scale that would maintain the feeling of self-respect. The relations of local authorities to the prevention and cure of disease are still very largely in the experimental stage. The Local Board has other than sanitary duties. It deals with the making and repairs of streets and highways, may

enforce certain regulations on builders, may provide public clocks, baths, libraries, parks, cemeteries, and markets. Some of these things it may do on its own initiative, others only when moved thereto by the ratepayers. It can only engage in the supply of gas and water. It is clear that these objects to be adequately attained will involve considerable outlay, and the increase of the rates has gone on at a rapid rate. Permanent improvements are usually effected by loans of varying terms, but none extending beyond sixty years. As there is ample provision for the security of the lenders, local authorities have been able to contract large liabilities. When a Local Board neglects to perform the essential work for which it was called into existence, the Local Government Board may compel it to fulfil its *raison d'être*, either by writ of mandamus or by having the work done and recovering the cost from the defaulting authority. The rural sanitary authorities deal with the same kind of problems as the urban authorities, but necessarily on a more limited scale and with lesser powers. The chief sanitary difficulties arise from congestion of population in certain districts, but there is plenty of work for the medical officer and the inspector of nuisances in the rural districts, though the need for parks or recreation grounds may be less. As we have already said, the guardians of the poor are now the rural sanitary authorities. Then there are the port sanitary authorities, of which there are forty-one. These have jurisdiction over the waters of the port, and such of the adjacent county as is specified in the provisional order.

Since 1870 the country has also been mapped out in education districts. Previous to the passing of Mr. Forster's Education Bill, the elementary instruction of the people was aided by the State, but it is only since that time that education has become an integral part of local government. The Act is administered by School Boards, and where these do not exist by School Attendance Committees of the Board of Guardians. The law requires that everyone having charge of a child shall see that it receives an efficient elementary education. In the same way the school authority is to enforce attendance at school, and to make an adequate provision of schools for the population. The School Boards are elected by the ratepayers, and the cumulative vote and the ballot are both in use. The boards have large borrowing powers, but have to obtain the sanction of the central government for each loan. The Education Department can dissolve a

defaulting board. The accounts of the boards are subject to an audit, and any illegal expenditure may be surcharged upon those who have authorized it. If a School Attendance Committee habitually disregards its duty, the Education Department may appoint a paid committee, the cost of whose work falls upon the defaulting authority.

The completest form of a local government authority is the municipal borough. Although the boroughs have been an important part of our nation from time immemorial, their present organization only dates from the passing of the Municipal Corporations Act of 1832. There were then 178 and there are now 242. The boroughs have not increased so rapidly as the advance of population would have justified us in anticipating. The borough is called into existence by royal charter, which may be obtained after an enquiry by a Committee of the Privy Council. The electors of a borough are the householders, and they choose a certain number of burgesses (varying according to population) to form the council. The councillors must have a property qualification and are elected for three years, but do not all retire at once. The aldermen are elected by the councillors, and hold office for six years. The mayor is elected by the council, either from its own body or from the body of citizens, but it is only on rare occasions that the power of electing an outsider as alderman or mayor is exercised by the council. The mayor is the chief officer of the borough, and within his jurisdiction takes precedence of every one gentle or simple. He is expected to be given to hospitality, and in some boroughs a salary or allowance is made on that account, while in others the cost of maintaining the dignity of the town falls entirely upon the private resources of the mayor. The cost is sometimes very considerable. All the functions discharged by sanitary authorities are centred in the town council. The relief of the poor and the education of the people are outside its functions, but it is the sanitary authority, and everything relating to the watching and lighting of the town, the regulation of its streets, the provision of baths, libraries, parks, and, in fact, all that belongs to the good government of the place, is under the control of the corporation. It is practically unchecked in its powers. The central government has no veto either upon its constitution, appointments, or expenditure. Its accounts are to be audited by a member of the council, known as the mayor's auditor, and two elective auditors. This audit is practically ineffective, as there is no power to

surcharge improper expenditure, which can only be challenged by writ of *certiorari*. Where there is no municipal borough there are separate highway boards and burial boards.

All the various local areas named are in a sense fractions of the county, but the borders of many of them extend beyond the limits of the shire. The old representative system has died out, and the shire-moot, where the lords of the land and the selected men of each township met for council, has passed away. The county court was in the thirteenth century a local parliament. Its powers have fallen into disuse or been transferred. The modern organization of the county is more dependent upon the central authority than any other local area. The Lord-Lieutenant is appointed by the crown, and is usually a peer. His office dates from the reign of Henry VIII. He is also *Custos Rotolorum*, keeper of the rolls, and appoints the Clerks of the Peace. He nominates those who are to be placed on the commission of the Peace as Justices. A man is often made a magistrate as a reward for political service to the party in power. The sheriff's was originally an elective office, but he is now appointed by the judges of the High Court, who "prick" with a pin the names selected on a list of those eligible for the office. The Sheriff has not much to do beyond giving attendance upon the judges of assize, but he is nominally the executive of the High Court. These functions are in practice discharged by the under sheriff. The office of Coroner is ancient. Municipal boroughs having courts of quarter sessions elect their own coroners. The elections for county coroners are keenly contested. The choice frequently lies between a medical man and a lawyer, but no professional qualification is essential. The coroner's main duty is to inquire into the cause of all violent or suspicious deaths. The justices of the peace are nominees of the crown, and must have property qualifications. Besides attendance at the petty sessions the magistrates meet in quarterly and annual sessions, and have control of the police, one half of whose cost is paid by the Central Government. They have also control of highway boards, and must see to the maintenance of county bridges and shire halls. They appoint committees for the management of lunatic asylums, for the inspection of prisons, and for the enforcement of the Contagious Diseases (Animals) Act. They appoint analysts, inspectors of weights, and overseers. They are the licensing authorities for music halls, theatres, and for the sale of intoxicants. The county rate is levied upon the parishes separately.

London in this, as in other matters, is a world of its own, but it is as chaotic as the rest of England in the matter of local government. The ancient Corporation of London has jurisdiction in "the City." It is the port and sanitary authority, has its own courts and police, has the monopoly of markets, and the right to collect dues on corn, coal, and wine brought within the port of London. There are twenty-six aldermen holding office for life, and 240 common councilmen elected annually. The Court of Common Hall has now only the function of nominating the Lord Mayor and certain other officers. The Lord Mayor is the chief magistrate, and has an official residence, the Mansion House, and a yearly allowance of 10,000*l.* The magnificent hospitality of the holders of the office is proverbial. Outside the Corporation the chief authority is the Metropolitan Board of Works, which consists of forty-six representatives of the Corporation, vestries, and district boards, which are the local authorities of the smaller areas. The district boards deal with parishes that have been united for common government. There is also the Metropolitan Asylums Board and the School Board.

Such is a mere outline sketch of the local and municipal government of the country. The chief defect of the system is its want of system, which undoubtedly involves needless waste of money and effort. If, however, this symmetry could only be obtained by a bureaucratic arrangement, it would be a very dear economy. A simplification of areas, a consolidation of some of the too numerous "authorities," and a better distribution of their duties, is all that should be aimed at. The increasing complexity of the social organization is against the concentration of all these diverse duties in the hands of one group. A man might have leisure and special qualifications to be a member of a School Board or a guardian of the poor who would not have the time or be of any particular use in a town council. Some women have done good service as guardians and members of the School Boards, but the number who offer themselves for election is but small. The working classes are scarcely represented in local authorities. This is a matter for regret, as they have shown in trades unions and other associations considerable powers of organization. With all its imperfections the local government of England is creditable to the nation. It is a grand recognition of the responsibilities as well as the privileges that belong to the citizenship of a great and free people.

WILLIAM E. A. AXON.

THE SCOTTISH DEER FORESTS AND GROUSE MOORS.

THE total area of the four counties of Scotland which are Highland counties *par excellence*, and in which are situated the chief deer forests of the country, extends to 8,030,190 acres; the extent of land under cultivation being only 419,385 acres, there is thus left for deer and other wild animals an enormous tract of country, much of it, of course, unfit for life of any kind, inaccessible mountains and rocky promontories upon which nothing can live. The area which is devoted to the deer in these four counties has been estimated to be as follows:—Argyll, 165,000 acres; Inverness, 710,000 acres; Ross and Cromarty, 760,000 acres; Sutherland, 136,000 acres respectively; but there are deer forests in some other counties as well, and the extent of land thus taken up in Aberdeenshire is 155,000 acres; Banff, 30,000 acres; Caithness, 50,000 acres; Dumbarton, 1,000 acres; Forfar, 51,000 acres; Perth, 97,000 acres respectively; which gives a total area for the deer forests of Scotland of 2,155,000 acres. The exact rental yielded by so large a tract of land is not known, but estimates founded on the assessments for taxation, which have been made, place the rent at about 2*s.* per acre, which would yield a total sum of about 216,000*l.* per annum. More than sixty of the Scottish deer forests are let, or retained by the owners, at rents ranging from 1,000*l.* to 4,000*l.* sterling; there is one gentleman, however, who pays for the land he has leased as a forest in two or three of the Scottish counties considerably more than 8,000*l.* per annum!

The tenants of these vast stretches of land obtain nothing in return for the large amounts paid but the privilege of shooting the deer and such other wild animals as they may be able to find on their ground, and it has been calculated by economists that each stag slain is killed at a cost of not less than fifty guineas, whilst the price of a brace of grouse to the lessee of a moor has been reckoned at a pound. These are "fancy" figures, of course, and must be taken for what they are worth, as plenty of miscellaneous game is found in some of the forests which helps to furnish the table; but by rule of thumb it is assumed that any deer forest which is capable of yielding a hundred stags

per annum is worth from 4,000*l.* to 5,000*l.* a year. In 1883, Mr. Winans, whose large rental has been referred to, shot 196 stags in twenty-eight days, the area of ground shot over extending to 75,000 acres. It is impossible to say with any great degree of accuracy how many deer there may be in the Highlands and Lowlands of Scotland. Mr. Bass, some years ago, took a rough count of the numbers in his forest, but, so far as the writer knows, the result has not been published. The following figures will afford the reader some idea of the number of stags expected in the counties named:—Aberdeen, 400; Argyll, 250; Banff, 65; Caithness, 100; Dumbarton, 12; Forfar, 200; Inverness, 1,500; Perth, 300; Ross and Cromarty, 1,300; Sutherland, 250 respectively; in all 4,377 stags, besides as many hinds and a number of roebuck. Estimated at the regulation price of fifty guineas, the number of stags given would represent a rent-roll of close upon 230,000*l.* per annum. The stag is the great prize sought for by the deer stalker, and stalking goes on till October is well advanced; before the close of the year a large number of hinds will also have been shot: as a matter of fact as many hinds as stags will be killed in the course of the season, greatly to the benefit of the servants of the estate, among whom the flesh is liberally distributed. As regards the stock of these animals in the country, the writer has calculated that there cannot be fewer throughout the whole of Scotland than from 50,000 to 60,000. If it is thought that out of such a large total a greater number should annually be killed, the difficulties which attend the stalking of the deer must be considered; as a rule it often enough takes two or three men the best part of a day to find and bring down a stag; 50,000 acres of ground is a vast area to explore, and although there may be several herds of deer on the land, they are often enough difficult to discover, and when found by no means easy to kill.

The sums paid by way of rent for deer forests do not, however, represent anything like the total cost of sport, as large amounts of money are annually expended in wages and the exercise of hospitality; it would hardly be an exaggeration to say that, in many instances, a sum equal to the amount paid for rent is disbursed in that incessant miscellaneous expenditure which the lessees of deer forests and grouse moors are being constantly called upon to incur. Gamekeepers, foresters, gillies, watchers, beaters, and other retainers require food and wages, and thus considerable sums of money are circulated now in districts of

the Highlands which sixty years since knew only poverty, and that sometimes of the most abject kind. The Highland population has undoubtedly felt the benefit of the changes which have recently taken place in the economy of the land; building has gone on with spirit, and many artizans and labourers have derived great benefit in consequence of the erection of improved shooting lodges and offices, the making of roads, the building of dykes, and the construction of fences of various kinds. Vast areas have also been planted with trees, which require to be protected from the deer, so that upon the whole the expenditure incurred both by owners and tenants has been very considerable. Precise evidence as to the amounts expended has in some cases been obtained. Mr. Fowler, of Braemore, stated that in the course of eighteen years he had disbursed a sum of 105,000*l.*; Lord Tweedmouth had expended 50,000*l.*; whilst Sir John Ramsden's total was 180,000*l.* It was incidentally brought out in the recent inquiry held into the condition of the crofters and cottars in the Highlands and islands of Scotland, that in four instances the ordinary expenditure during a period ranging from three to seventeen years, amounted in the aggregate to 121,209*l.*; while for the same periods there was incurred a special expenditure on improvements of 65,876*l.* These sums amount in all to a total of considerably over half-a-million sterling, which, could the full tale of the sums of money spent all over the Highlands be told, might easily be increased to ten times the amount. It has been well said of deer stalking and grouse shooting, that "it has been the means of raining gold on Scotland and the Scotch for a period of half a century."

It may be remarked before going further, that the commercial value of the deer which are hunted in Scotland is not of much account. Venison is not found in the market in any quantity, nor is it perhaps a food that would be popular with the public; but the quantity of flesh obtained is not inconsiderable, as a full grown stag will weigh from 12 to 20 stones, or say an average of 14 stones each animal, which for the number killed (taking in the hinds as well), would represent a total amount of about 140,000 stones of venison per annum, most of which is consumed in the localities where it is killed, or is distributed as gifts to friends of the sportsmen residing at a distance, but, to tell the truth, a haunch of red deer venison is not much appreciated, as it is expensive and troublesome to cook. The best venison for the

table is supplied by the fallow deer raised in the home parks of England, which are, in some instances, specially fed for the purpose from an early day of their lives. It will be obvious, from what has been said as to the expenditure necessary to keep up a deer forest, that under no circumstances can it be made to "pay," in the breeches pocket sense of the term. The only return which can be obtained by a gentleman who becomes lessee of a forest is "the sport," and such pleasure as he may derive from the hospitable entertainment of batches of his friends.

"Deer stalking," as practised in the Highlands of Scotland, involves a great amount of real hard work, the stag being an animal which is very difficult of approach. Many interesting accounts of "stalks" have been published from time to time, but divested of the "charming effect" with which such narratives are usually embellished, the killing of a stag may require from six to ten hours' work. The forest to be explored for the necessary quarry may be situated at a distance of some five or seven miles from the shooting lodge, thus necessitating an early start; arrived near the scene of action, the work begins in earnest, some forester or gillie taking the command of the party, and tyrannising over it in the most approved style of deer stalking discipline. The deer may be in yonder glen in number sufficient to afford some sport, but the deer is an animal of a most suspicious nature, and with a keen sense of smell; it is therefore requisite to approach the herd—or perhaps only a solitary stag may be discovered—in a roundabout way; in order, therefore, to make assurance doubly sure, Ronald McAllister insists on making a *détour* of a couple of miles, so as to reach the feeding ground of the animals by a sure route; crouching, creeping, and running quickly across the wind, wading in water, scrambling over rocky places, falling into peat holes, and meeting with no end of petty and harrassing adventures, the point of vantage may be at length gained, only to find the alarmed quarry in full flight to some distant corrie, and thus necessitating another scrambling march of seven or eight miles, in order to get an advantageous shot at an unsuspecting animal. A deer drive affords considerable excitement, but it is scarcely a sportsmanlike act to lay in wait for an animal that is driven up to the muzzle of the gun. In that way, however, a very large number of these animals are annually killed, some of them being driven into the place of slaughter from a great distance. Records of

this "pastime" having been planned for the amusement of Royalty by the Earls of Athole more than 300 years ago are extant; in the days referred to some of the "drives" were of great extent, 2,000 persons having been employed to gather in the deer, 360 head of which were killed.

The Scottish deer forests, as has been indicated, are of great extent, covering large areas of ground. Several of them, as Langwell, Athole, Glenstrathfarar, Applecross, Achnashellach, and Park cover 50,000 acres of ground, whilst the Forest of Reay covers 70,000 acres, and Blackmount is quite as large, Mar having an area which is less by 10,000 acres. Tracks covering an area of 30,000 acres are numerous, and there must be 100 distinct deer forests in Scotland. Persons who have been in any of the Scottish deer forests will have probably come to the almost inevitable conclusion that in giving shelter to the red deer and other wild animals these tracts of ground are put to their best use, and it is therefore a happy circumstance that it has become a fashion of the period to chase the roebuck and hunt the stag. The proprietors of these immense areas of land thereby secure a rental for their ground which they could not otherwise have obtained. The contour of the deer forest is varied from patches of grass here and there to stretches of heather and peat moss, with occasional mountain spurs and small plantations of trees. Ever and anon a small loch is come upon into which flow one or two little streams, and here many wild animals may be seen quenching their thirst. There are at some places two or three fields of arable land, and in one or two of the so-called forests a few cattle are fed, and even a few sheep, but sheep and deer are incompatible on the same land. As showing how sterile are the places devoted to the stag it may be here mentioned that it would, as a rule, require six acres of such ground as the deer inhabit to feed one sheep, and even on that large surface it could only exist for a few weeks in the summer time of the year; in winter the sheep would require either to be removed south, or their food to be brought north. More people are employed by the lessees of the deer forests than would be employed by the sheep farmers, and the annual expenditure is probably ten times what it would be on a series of sheep walks. Grouse are found in greater or less abundance in every county in Scotland, but they are more plentiful in the northern than in the central or southern counties. Perthshire is looked upon as being the representative grouse county of Scotland, the game rental of

that county being at the present time about equal to what the sporting rent of all Scotland was fifty years since.

We may briefly describe the grouse-bearing capabilities of the chief Scottish counties for the benefit of those persons who are not acquainted with the economy of our grouse moors. In the county of Aberdeen there are about 220 distinct estates for either deer stalking or grouse shooting, or for both conjoined, the rents ranging from 25*l.* to 4,000*l.*; a good many of these are of course kept in the hands of the proprietors. Her Majesty, we observe, is assessed on a rental of over 2,000*l.*, the Forest of Mar being assessed on 4,000*l.* The Aberdeenshire moors yield a fine head of excellent grouse. In the productive grouse year of 1872, a big bag was made on Delnadamph, 7,000 brace having been shot. In Argyllshire there are, speaking roundly, 230 deer forests and grouse moors, and in shooting a very varied bag may be made. The fishings are also numerous and productive. The grouse of the county of Caithness are famous for their fine flavour and plump condition. The shooting estates are not numerous, not more than fifty, but they are much run upon, and in good times there are seldom any of them vacant. There are several productive grouse moors in the county of Banff, as well as two fine deer forests: Glenfiddich and Glenaven. The salmon fishing in the Spey is good, and affords fine sport; the Spey is also a netting or commercial river. The grouse moors of Morayshire, considering their size, are among the best in Scotland; there are sixty-six estates in all, some of which, of course, as is the case in all the counties of Scotland, are never let, but remain season after season in the hands of the proprietors. Forfarshire is well stocked with "the bird of sport." There are 118 fine moors and forests, and the game rental of the county is considerable; about 200 stags are annually killed in the fine deer forests of Forfarshire. In the county of Kincardine there are about sixty sporting estates. As has been stated, the representative grouse county of Scotland is Perthshire. It contains nearly 400 grouse moors and deer forests, and the yield of grouse in some years is very plentiful, ten brace to the hundred acres being about the average, but on some of the shootings that number is often considerably exceeded, fifteen and even sixteen brace having been obtained on some of the moors. Two thousand brace have been killed in some seasons on the more prolific stretches of heather. In the adjoining county of Stirling there are about ninety shootings; in Dumbartonshire there are forty-seven; whilst in the

Island of Arran it has been said that the Duke of Hamilton makes the biggest bag in Scotland.

The great county of Inverness contains over 200 sporting estates, some of which bring a very high rent, both deer forests and grouse moors being in demand. Big bags are nearly always obtained in good years; by big bags we mean for this county, from 1,200 to 2,000 brace of birds, the grouse being of good quality. A very large herd of deer is annually killed in Inverness-shire, and the fishing is excellent. The annual game rental of Inverness-shire is not far short of 100,000*l*. Grouse are abundant in the conjoined counties of Ross and Cromarty, as many as 1,000 brace of birds being shot on some of the moors. There are 175 moors and forests let, or retained by owners at rents ranging from 40*l*. to 3,000*l*. The number of stags annually killed will range from 1,200 to 1,400. One tenant has as much as 90,000 acres of forest in this county, and even more than that in Inverness, in fact he rents an area of ground equal to 200,000 acres. In Sutherlandshire, the "lots" are not so numerous as in some others, numbering sixty-two in all. The Duke of Westminster is lessee of the forest of Reay which extends to 70,000 acres, and the Duke of Sutherland holds much of the best sporting ground of the county in his own hand. There is plenty of fine salmon and trout fishing in the county of Sutherland. The sporting rent-roll of the whole shire will not be less than 30,000*l*.

Grouse are not so numerous in the Lowlands of Scotland as in the Highlands, but in each of the Lowland counties there are shootings. The moor-fowl of Ayrshire are of good quality, and there are about 90 distinct shootings in that county. The rental of some of them is considerable—as Blairquhen, 650*l*.; Alton and Doularg, 500*l*.; Kilkeran, 500*l*.; Kirkmichael, 400*l*.; and several others at varied rentals. A fair head of grouse can always be shot in this county in good years, and there is plenty of miscellaneous game. There are probably 50 distinct shootings in Berwickshire, some of them, however, being only of small extent. In the county of Dumfries we find over 90 shootings, some of which are not of great magnitude; one rental reaches 700*l*., and several of the shootings are assessed at sums exceeding 200*l*. Midlothian has also a stock of grouse, and the Penicuick shootings—they are rather miscellaneous—are assessed at the sum of 1,000*l*. The game-bag filled in Fifeshire is also exceedingly miscellaneous, as it is also in East Lothian (Haddington-

shire). In the stewartry of Kirkcudbright and the adjoining county of Wigtown, grouse are tolerably abundant; in the former there are 111 shootings, and the latter county about 50. Black game are also plentiful in these counties. There are over 68 shootings in the county of Lanark, some of them being very prolific, whilst the grouse is of excellent quality. In some of the other Lowland counties there are several grouse moors: in West Lothian, 26; in Peeblesshire, 40; in Renfrewshire, 36; in Roxburghshire, 55; and in the county of Selkirk, 22. Black game, partridges, and pheasants abound in the Lowlands of Scotland, whilst hares are still tolerably numerous. There are 15 grouse shootings in the Orkney Islands, and these birds have now been acclimatised in Shetland.

The separate forests and grouse moors in the thirty-two counties of Scotland will, in all probability, number 2,600, excluding those rented at sums under 30*l.*—probably three or four hundred—but we are unable to give the precise number, as some of the shootings are conjoined and held by one tenant, whilst in some cases a forest or shooting may be divided. The number of grouse supposed to be annually killed cannot be stated with accuracy, as no official statistics are taken of the yield of the different shootings, but it has been computed that from 400,000 to 500,000 brace will be obtained.

The following figures will give an idea of the sport usually obtained. They denote about a score of the big bags of the shooting season of 1883:—Allargue, 188 brace in five days; Birse, 472 brace in first week; Cromdale, 870 single birds in five days; Carrbridge, 400 brace in seven days; Candacraig, 275 brace during three days' shooting; Corndavon, 120 brace per day for eight days; Dunachton, 289 brace in four days; Drumour, 160 brace per day for six days; Glenberrie, over 200 brace in two days; Glenshera, 220 brace; Glencairn, over 200 brace for five days' sport; Garrols, in three days, 260 brace; Invermark, first six days, 550 brace; Kinnaird, first nine days of sport, 790 brace; Kirdels, 230 brace in three days; Loch-Kennard, four days' sport, 250 brace; Castle Menzies, from 12th to 17th, 350 brace; T'ulchan, from 12th to 31st, 2,000 birds. Numerous other figures might be compiled, but the chronicles of sport which are annually published in the local newspapers are confined, as a general rule, to the first few days of shooting, and to the chief moors only.

The economy of a grouse moor is not so well understood

as it ought to be, the exact number of birds that a hundred acres of heather will breed and feed never having been accurately ascertained. It will vary of course on different moors. On some the shelter for the nests is all that can be desired whilst food is plentiful and the enemies of the grouse few; on other stretches of heather, conditions the very opposite of these may prevail, so that the moor is in such places very sparsely populated. The grouse is a good breeder and an attentive mother, whilst the cock-bird is all that can be desired, and fights for his family when it is attacked by enemies with great valour. The female grouse lays from seven to eleven eggs; probably on an average eight eggs will be hatched from every nest, and out of each covey as many as five birds may arrive at maturity, although surrounded by enemies. In some years disease becomes epidemic and the birds die in thousands; the cause of this mysterious malady has never been discovered, nor has an effective remedy for it been found out. It has become a saying in regard to the grouse that "the more that is shot, the more there is to shoot," so rapidly does it multiply and replenish. Although the heather area has from various causes become much diminished during the last fifty years, the grouse seem to be five times as numerous as they were half-a-century ago. As a matter of fact, commerce in grouse may be set down as a product of the railway system. Fifty years ago the bird was not dealt in as it is now, when tens of thousands are found in the market on the 13th of August and following days, borne to their destination by quick-speeding railway parcel-vans.

In consequence of the enormous numbers of birds which in the early days of the season find their way to market, prices at times fall to a nominal amount, and although every brace shot may cost the tenant of a moor a sovereign, it is questionable if he will receive on the average 2*s.* per bird; but in the retail poultry-shops the public are still charged a large sum for their early grouse, in many instances a guinea a brace, and in very plentiful seasons 12*s.* or 10*s.* Gentlemen have no alternative but to sell their birds, in some seasons they shoot so many as to lead to some degree of embarrassment as to how they can otherwise dispose of them, but by no chance can they recoup even a moiety of their expenditure for rent and living by the grouse sold.

The social life of the moors has of late years become quite extravagant, the old simplicity of living having vanished; dinners are as heavy and wines as expensive as in London or

Glasgow, whilst for a few weeks all the shooting-lodges and Highland castles are crowded with guests. The terms on which a grouse moor may be leased are exceedingly varied, and, in some instances, very stringent. The "tack" may be for a period of years, or it may be for "the season," by the season being meant a term of perhaps six or eight weeks, and in many cases the exact number of birds that shall be shot is specified in the missive of agreement. The resident gamekeeper is often included in the bargain, it is his duty to act for both parties, laird and lessee as well; he keeps count of the number of birds which are killed, and takes care that the total agreed upon is not exceeded. It has often proved the case in years gone by that some unprincipled person has become lessee of a stretch of heather, and in the course of the season has completely harried it, leaving not so much as one brace of breeding grouse. As the consequence of such an unprincipled proceeding the next tenant has obtained no sport, and complains to the proprietor of being swindled, the proprietor all the time being perfectly ignorant of what has taken place.

The gathering of the grouse harvest lasts for a period of a hundred days, not counting Sundays, but at the present time sport on the moors is well over by the middle of September, indeed some places are exhausted by the end of August, but, as a rule, there is a good deal of steady shooting right on to the close of October, and as has been already stated, in the course of the season some 500,000 brace of grouse may be obtained. As a matter of course, a large breeding-stock requires to be left to keep up such a supply, probably as many as 120,000 brace, the grouse being a bird of strictly monogamous habits. Supposing the hens all round to lay an average of eight eggs, seven of these may be counted upon to produce birds, but of the chicks a certain percentage is sure to fall a prey to enemies and the vicissitudes of the climate, so that only five young ones in all probability may come to the guns, and half of these will in time become the prey of the sportsman, as also a full half of the parent grouse, the rest being left to multiply and replenish the heather. These figures, however, must not be taken for any more than they are worth; on some moors the birds are far more numerous than on others, and the birds in like manner differ, some are strong and healthy and lay a greater number of eggs. Some moors are always in fine condition, and the birds as a rule healthy, but this we believe is greatly dependent on the

state of the heather, which should be burnt annually in patches, so as to afford a supply of fresh grown buds to the young birds. The mysterious disease which occasionally breaks out among the grouse and kills off tens of thousands is undoubtedly due chiefly to bad food.

A very large number of the grouse which are shot on the Scottish moors are forwarded to London, from whence they are distributed to many other places of consumption; it has been computed that 250,000 brace of birds will be consumed during the season in the great metropolis during the 120 days of the season, and quite as large a number may be set down as being necessary for the general commissariat of the country. A grouse when divested of its feathers and disembowelled will weigh about sixteen ounces, so that from this bird of sport the public derive in the course of the season about 500,000 lbs. of delicate food at a probable cost of about 120,000*l.* Gentlemen who have a large number of birds to sell usually contract with a dealer to take all they can send him at a fixed sum, the dealer taking his chance of profit. Ultimately the largest moiety of the birds killed are forwarded to London, Manchester, or other populous places, where they are disposed of to the retailers, and accounted for to the person who sent them as so many single birds at various prices, as 20 at 6*s.*, 32 at 4*s.* 9*d.*, 40 at 3*s.* 6*d.*, 52 at 2*s.* 9*d.*, 48 at 1*s.* 6*d.*, &c. A commission of 5 per cent. is charged on the sales as well as the cost of the carriage, &c., and the balance due is forwarded at once along with note of sale.

The following note of comparison as to the increasing consumption of game in London may prove interesting: it shows how the demand for game had grown in a period of thirty years:—

	1850.	1880.
Grouse and Blackgame	115,000	210,000
Partridges	140,000	176,000
Pheasants	90,000	160,000
Hares	110,000	250,000
Rabbits	1,500,000	3,500,000

Other large towns and cities, according to their populations, consume in a similar ratio, and it is not assuming too much to say that the figures given for the consumption in London in 1880 will be at least doubled by the country demand for these luxuries of the table.

Nothing is more remarkable than the rise which has occurred in the game rental of Scotland. Half-a-century ago it would

not perhaps be assessed at more than 50,000*l.*, whilst to-day it will be ten times that sum, and as much more will be expended in the cost of living, the necessary expenditure for travelling expenses, and the exercise of hospitality. It was not till Sir Walter Scott had written the "Lady of the Lake," that Scotland and its people, and their customs and their manners, became the rage. Highland scenery, the lakes and mountains of the far north, more than sustained the charm of his descriptions, and persons speedily began to come from the most distant ends of the earth to gaze on the picturesque beauties of the Trossachs, and the Queen of Scottish Lochs. The monarch of the glen attracted attention, and so did the "moorfowl" of the heather. Coaches became crowded with enthusiastic sightseers, the humble Highland hostelries were nightly filled with persons who came to admire the scenery which the great Wizard of the North had rendered classic. The taste grew with what it fed on, till at length people came to shoot the grouse and stalk the deer in earnest, so that in time the proprietors of the moors and forests began to find themselves in possession of a marketable commodity. It was a pleasant discovery, and when railways expedited communication and rendered the visitation a pleasant one, the rents rose rapidly, and vast areas of land speedily came to possess considerable money value; the heather lairds began to have an annual income; the business of sheep-feeding had brought them in a few pounds a year, but the grouse soon yielded hundreds, and the prosperity continues to-day, and so far as has been seen is likely to last for years to come. As a matter of fact the rents have now, when trade is brisk, become somewhat oppressive; thirty or forty years ago a man could get a big shooting for a matter of 70*l.* or 80*l.* for the season, now only a small expanse of moor can be obtained for such a sum, whilst miscellaneous expenses of all kinds have greatly increased, so that a matter of 200*l.* goes but a small way during the shooting season: yet we must have an average rental of 200*l.* if we are to make out that 2,500 of the moors and forests of Scotland bring in a gross rental of half-a-million sterling. All in Scotland owe a deep debt of gratitude to Sir Walter Scott; it is to his writings that the Highlands owe their prosperity, a wave of his magic pen has secured an expenditure of a million of money on the grouse moors and deer forests; it becomes more apparent every year that Sir Walter Scott "made Scotland."

J. G. Bertram.

THE MERCHANT NAVY.

WHATEVER view may be taken of the Mercantile Marine, as to its strength, its composition, its position relatively to the mercantile forces of other Powers, it stands out unmistakably and prominently as a symbol of the expansion of this Empire, of its enterprise and of its wealth. This may be sufficiently illustrated by a reference to the fact that in the last fifteen years the tonnage of shipping entered and cleared at ports in the United Kingdom has risen from 34,000,000 to 62,000,000. Commercially speaking this fact is striking: but it must be supplemented by another fact if it is not to be misleading; for, while it is certain that the tonnage of shipping entered and cleared shows such a marked advance, it is also certain that the tonnage of vessels registered as belonging to the United Kingdom shows no such advance, while the actual number of vessels shows a considerable reduction in the same period. Fifteen years ago the tonnage was nearly 6,000,000, while it is now nearly 7,000,000 tons; whereas the corresponding number of vessels in the same period is given as 28,444 and 24,796. This comparison is more interesting as illustrative of the actual growth of the Merchant Navy, when it is carried back to an early part of the century. In 1818 the number of vessels belonging to this country is put down as 21,526, which is about 3,000 less than the number now registered. But when the tonnage is stated the marked advance of the Mercantile Marine is at once perceptible, it being put down for 1818 as 2,426,969 tons, and for the last year officially recorded—the year 1882—as 6,956,865 tons, the increase in vessels being 13, and of tonnage, 143 per cent.! But the steady increase in the material power of the Merchant Navy becomes more clearly apparent when the classes of vessels composing it are analysed. I have already stated that, in the last fifteen years, the number of British vessels had diminished from 28,000 to 25,000; but the valueless character of such a test as this will be seen when it is ascertained that, whereas the number of sailing vessels had decreased from 25,000 to 19,000, the number of steamers has increased from 3,000 to 6,000. What this increase means, and what its importance is as a factor in assuring us of the growth of the power of the Mercantile Marine, will be seen by a brief reference to the composition of this steam force. Figures alone

and elaborate tabular statements are insufficient for this purpose: indeed, taken alone, they must mislead. The quantity and quality of the work done by this service compared with any previous date cannot be measured by the foot-rule of figures or tables, nor determined by reference to numbers of ships or comparative tonnages; but by the class of the vessels employed, and the character of the work they are employed on. "The quantity of that work is to be measured by the number and length of the voyages made, and the nature of the freights carried;" and the quality of the work by the punctuality of its performance, and the confidence extended to it by those requiring its performance.

To the ships which are employed and the steady improvement in them since the introduction of steam, I will now refer briefly. It is hardly worth while to go minutely into the inventions of the 16th and 17th centuries, or to do more than note the fact that steam propulsion was then attempted. Thus, in 1618, David Ramsay obtained a patent for an invention to "make boates for carriages running upon the water as swift in calmes and more safe in storms than boates full sayled in great windes;" and, in 1630, he patented a plan "to make boats, ships, and barges to goe against wind and tide," and "to raise water from low pitts by fire!" Anyone, however, who is interested in the antiquarian or historical portion of this subject will be amply repaid by referring to Mr. Lindsay's exhaustive chapters in his History of Merchant Shipping. In 1813 a steamboat was built at Leeds, and started to run between Norwich and Yarmouth, and in 1814 a steamer was first seen on the Thames. It will, I think, be found that the first genuine impulse to steam navigation was given by Mr. David Napier, who built the "Rob Roy," which carried engines of 30-horse power, and ultimately was employed as a packet boat between Dover and Calais. The introduction of iron created a revolution in construction, and added largely to the capacity of vessels for mercantile purposes. In 1833 Mr. Fairbairn constructed two iron steamboats for service on the Humber, and was followed four years later by Messrs. Laird, who built two iron vessels for the East India Company. The last important phase in the construction of merchant vessels was the substitution of the screw for the paddle, which is now universally adopted for all first-class merchant vessels.

Having thus traced the course through which construction

has passed, the actual classes of vessels now constituting our merchant fleet claim attention.

Possibly the struggle between the shipowners of this country and the United States for the Atlantic carrying trade was the means of giving the greatest impetus to construction. The establishment of the Cunard Company was, at any rate, one practical result of this, as it is one of the most important and interesting features in the modern history of the Merchant Navy. In 1830 Mr. Samuel Cunard, of Halifax, N.S., proposed to run a mail service between the two continents, and was successful in obtaining the Government contract for the purpose, in conjunction with Mr. George Burns and Mr. David MacIver. From this sprang the celebrated Cunard Company, which started with four ships, the "Britannia," "Acadia," "Caledonia," and "Columbia." The success of their vessels, which were superior in power and speed to any others similarly employed, was marked from the first. An interesting incident in the history of these vessels was the run between the "Britannia" and the "Washington," an American ship, which was built to compete with the British line. The "Britannia," contrary to the anticipations of the "New York Herald," won the race by two clear days. The American shipowners were not content with their own effort, but induced their Government to enter into a contract to run a mail line between New York and Liverpool, with Mr. Collins. On the subject of their efforts Mr. Bayard, a Member of Congress, asserted that "to enter the contest with England for the supremacy of ocean steam navigation required talent, energy, and faith of the highest order known to our countrymen, for to fail would involve a loss not only of the vast sums necessary to make the effort, but, what is of far more value to every lover of his country's reputation, it would ensure national disappointment, more deeply felt from the fact that England had already been vanquished by our sailing ships, and gracefully yielded to us the palm of victory;" since more brilliantly illuminated by the yacht "America," and the clipper ship "Witch of the Wave."

No effort was spared in the construction of Mr. Collins's steamers to ensure a high rate of speed, no matter at what cost, the one absorbing idea which prevailed being to run the Cunarders off the sea. The answer of the Cunard Company to this attack was to add the "Asia" and "Africa" to their fleet, which were important additions, but not important enough to

successfully outstrip their rivals. With the launch of the "Persia," however, they made their first great stride in construction, and added the first iron vessel to their fleet. She was not only the largest steamer, but the fastest they owned; in fact this vessel placed them in a position to defy competition, for in 1856 she made four passages in less than nine days and a half. In 1862 the "Scotia," a finer vessel even than the "Persia," was built for this Company, attaining on her trial trip a speed of nineteen statute miles an hour. And in its turn this vessel is eclipsed by later additions in the shape of the "Bothnia" and "Scythia." Both these vessels are of great strength, carrying twelve lifeboats, and affording much comfort and luxury for passengers. With a fleet of 50 vessels of more than 90,000 tons, the Cunard Company holds of necessity a prominent place in the Merchant Service, and its position is interesting, if only on the ground that its vessels, from the "Britannia" to the "Bothnia," mark, in the most distinct manner, the steady but rapid progress which has been made in the construction of merchant steamers. In the Transatlantic service this Company employs twenty-three large steamers of 65,000 tons. But what is especially remarkable is the fact, which is as authentic as it is well known, that during thirty-five years of daily work, only two vessels have been lost; and the other fact, which is equally authentic and more remarkable, that no life has been lost through shipwreck or any other cause of disaster, in any of their passages across the Atlantic. As regards enterprise, the Company furnishes an admirable illustration of what private and individual effort can do, as opposed to efforts made under Government patronage or assistance.

Next to the Cunard, the Inman line deserves notice. Started in 1850, by Mr. William Inman, this line soon made a name for itself in connection with the substitution of the screw for the paddle-wheel. The "City of Glasgow" was the first vessel purchased by this Company; and, in common with some other large vessels, ran between Liverpool and Philadelphia for several years. In 1857, New York became one of their ports of call; in 1860, the service was made weekly instead of fortnightly; in 1863, it was increased to three times a fortnight, and in 1866, they established a service twice a week during the summer months. One of the most remarkable vessels on this line was the "City of Paris," of 3081 tons, and 500 horse-power, which, in 1869, conveyed the Duke of Connaught to America in six days,

twenty-one hours, the quickest passage ever made. A special feature arranged for by Mr. Inman was the economical and comfortable provision for emigrants. The evils and discomforts which were associated with emigration passages were to a large extent removed by his exertions. Nine years ago, the "City of Berlin" was launched from the yard of Messrs. Laird, which, in point of size, almost rivalled the celebrated "Great Eastern."

The Allan Company is another instance of personal industry and enterprise applying itself to overcome obstacles which had been regarded as insuperable. Mr. Alexander Allan and his family, foreseeing the success which attended the use of the screw, established a line of steamers to run between Liverpool and Canada. Under a subsidy from the Canadian Government, they undertook the mail service in 1856, and have since continued it, though not without loss, which the dangerous character of the navigation rendered unavoidable. Among the fastest of their vessels, which for the most part will bear comparison with other lines, is the "Polynesian." Her first passage, between Quebec and Londonderry, took seven days eighteen hours and fifty-five minutes.

Amongst the more recent of the Atlantic lines, the Guion may be referred to. Mr. Guion, who acted in some respects as an agent for the Cunard and Inman lines, started, in 1866, a line of his own with the "Manhattan," the first of a number of vessels which he employed, all of about 3,000 tons. Among the most widely-known Transatlantic lines of steamers remaining to be noticed is the White Star, working under the management of Messrs. Ismay, Imrie, and Co., who commenced running their boats between Liverpool and New York in 1870. One of their most popular vessels is the "Britannic," which does her 15 knots an hour easily, and cost in construction 200,000*l*. As an instance of enterprise, and of steady progress from modest beginnings, should be mentioned the Anchor Line, established by Messrs. Handyside and Henderson, in 1856, to sail between Glasgow and New York. From one or two vessels with which they were content to start, they possess a fine fleet of steamers of 71,000 tons, and 15,000 horse-power.

I have not instanced these companies with any view of showing statistically what is their contribution to the strength of the Merchant Navy; but to show as clearly as can be shown of what stuff this Merchant Service is composed. As illustrations of what industry and enterprise can effect, in face of gigantic obstacles

and unremitting opposition, these lines afford remarkable examples; and emphasize a remark which has constantly been made that the Mercantile Marine is the backbone of our naval strength, and possesses a latent power capable of being used for Imperial purposes, of which the nation at large has little conception.

Turning to another class altogether, the Royal West India Mail Steam Packet and the Peninsular and Oriental Companies deserve attention. In 1841, when it was determined to establish a mail service between the West Indies and this country, the Royal Mail Company commenced operations with fourteen large steamers, so powerful and of such strength that they were able to carry and use the ordinary ordnance employed in ships of war. For a time their efforts were not financially successful; but when their first difficulties and errors were overcome, their prospects began to improve, until, in 1850, the construction of a railway across the Isthmus of Panama opened out a lucrative field of work, in the possibility of establishing by this means a direct route to Australia. Some of their finest vessels were lost at various times through misfortunes of one kind and another. The "Isis," wrecked off Bermuda on a reef in 1842, and the "Tweed" off Yucatan in 1847, were amongst the most noted, and are here only mentioned to show the intricate and dangerous nature of the navigation among the islands in the West Indies, as well as the exceptionally stormy weather which vessels have to encounter in that part of the world. Of course the loss which struck public attention most, and is even now not forgotten, was that of the "Amazon" by fire in 1851. At present this Company's position stands justly high, and it possesses a fine fleet of very powerful and excellent vessels.

Of all companies engaged in ocean work, and in the prosaic duty of conveying human beings and freight from one port to another, the Peninsular and Oriental is alone surrounded by a sort of halo of romance. It has furnished fiction with substantial material; while, as regards the theatre, Tom Taylor's "Overland Route" is even now, with its well-known scenes on board a P. and O. steamer, both popular and successful. The career of the Company is almost as romantic as its work; its vicissitudes have been more remarkable than those of most other companies; while, in spite of them, its position is as well assured as that of any company in the world. Before 1837, the Peninsular mails were conveyed by sailing vessels from Falmouth. At this time

however, Messrs. Willcox and Anderson were agents for a line of steamers run by the Messrs. Bourne, between London and the Peninsula; and, as they were able to lay before the Government certain definite proposals of a very advantageous character in connection with the mail service, in which the contrast between the sailing vessels and their steam-packets was strongly pointed, they were allowed to compete for the contract; with the result that, in 1837, a contract was concluded for the conveyance of the Peninsula mails for 20,500*l.* a-year. Subsequently, their line was extended so as to embrace Alexandria; and, on the Government accepting their tender, they ran the mails to Alexandria with two fast vessels, the "Oriental" and "Liverpool," the company taking the title, for the first time, of "Peninsular and Oriental." It was naturally only a question of time when the Indian service was added to the other work done by this company, though the jealousy of the old East India Company formed for some time a material stumbling-block. Their success was, however, at last assured; and in accepting the whole Eastern mail service from the Government, they marked their progress by the contribution of the "Himalaya," whose reputation is not, even now, a thing of the past. Since then this company has conducted its service with varying fortunes financially, but with complete success in every other way, and forms now one of the most important elements in the Mercantile Marine, with its powerful and well-organised fleet of between fifty and sixty vessels.

Although I have only glanced briefly at some of the principal lines, it must not be supposed that they are in any way exhausted; but I have said enough to show in what the material power of the Mercantile Marine consists. Perhaps it would be right, in regard to modern lines, not to omit a mention of the Orient, whose magnificent steamers, in connection with the Australian service, are so well-known. The company was formed by a union of the two firms of Messrs. Green and Anderson, and started with a fine fleet of eleven vessels, which bear comparison with the ships of any other company in existence. This company represents enterprise and energy in their highest form, and owes its success in no small measure to the services of a naval officer, Mr. S. Waymouth, on its management. His experience has naturally been of considerable value.

Before quitting this subject of ships, I cannot do better than refer to the last new vessel added to the Cunard line, to show to

what perfection and skill construction has been raised. Early in October last the "Umbria," the new Cunard liner, went for her trial trip. Both this vessel and the sister ship, "Etruria," built about the same time, are in many ways remarkable. The account given in the "Times" is very interesting. To begin with, except the "Great Eastern," these vessels are the largest afloat. It is anticipated that they will be able to cross the Atlantic in six days; and this anticipation is based on the trial cruise, when the "Umbria" steamed for 30 miles at a speed of 21 nautical miles an hour. The engines are enormous, with a minimum horse-power of 12,000. She is 520 feet long, 57·3 feet broad, and 41 feet deep, and has a tonnage of 8,000 tons. Her special features are her breadth and depth, which are of great importance in point of comfort in such vessels as these. All the accessories for the convenience of passengers are on a very ample and luxurious scale. The boilers are fitted with furnaces at each end. An important point, from a national point of view, is that the "Umbria" is fit for naval service, which is the case now with a large number of the newer classes of vessels; but a more important one is that she can carry sixteen days' coal supply and steam continuously at a speed of 18 knots an hour, which alone places her far in advance of the ordinary type of war-ship.

The question of wrecks demands a little attention before the subject of ships is left. This matter was brought prominently into notice by Mr. Plimsoll and the Committee which bears his name, and later still by the action taken in this direction by the proposed Merchant Shipping Bill. The impression that a sea-life is more dangerous now than in previous years is not borne out by facts, which tend to show that the increase in the number of wrecks has not progressed with the number of ships. The Board of Trade analysis of wrecks goes distinctly to show that there has been a steady improvement. In 1833 the percentage of loss was 3·72; in 1841, 3·20; in 1860, 3 per cent.; and in 1870–2, it was 2·95. Later on the figures give a similar result. Thus in 1870 the number of wrecks was 1,184; in 1874 it was reduced to 650. In fact it was shown that, whether a comparison is made of wrecks with aggregate shipping on the register, or with the employment of that shipping, the tendency is to a diminution in wrecks. But there is something appalling in a positive loss of 650 vessels in a single year, when considered in connection with the loss of life involved. Still the impression may be generally one of moderate satisfaction,

provided this satisfaction does not lead to over-confidence or to a want of energy in maintaining as far as possible precautions against loss. The conditions under which vessels trade now are vastly different from what they were thirty or forty years ago. To quote the Board of Trade reports: As there is "an enormously increased demand; requirement by the public, perhaps sometimes irrational, for very great speed; the ever increasing risk of collision; a growing scarcity of labour in this as in other employments; the adoption of a new material, iron, and a new motive power, steam, with all the dangers necessarily incident to such experimental novelties, there is reason, not for remaining satisfied with the present state of things, but for a confident belief that our merchant shipping is at any rate as good and as safe as it ever was at any period of which we have accurate records, and that it is becoming more and not less safe." In leaving this portion of the subject it need hardly be said that about ships, as about the companies which own them, the fringe merely has been touched, and that those which have been referred to can merely be regarded as illustrative. No further information can, however, be desired than that given by Mr. Lindsay in his sumptuous work on the Mercantile Marine, which it will be seen has been liberally used in the foregoing pages.

The merchant seaman has at all times been the centre of controversy and interest. His capacity, his origin, his nationality, his wrongs, and his future have been themes on which the philanthropist has dilated and the statesman pondered. The general impression—which I need hardly say is a false one—is that the sailor has deteriorated, that he is gradually becoming extinct, and that, as far as nationality is concerned, he is for the most part a foreigner. But I doubt if there ever was a time when this impression did not exist. The *laudator temporis acti* has always been active as well as forcible, and he has certainly not left the sailor out in the cold. This is what Sir T. H. Farrer, of the Board of Trade, says: "I find statements concerning the superior moral character of seamen 20 or 30 years ago made by men so experienced, sagacious, and trustworthy, that it would be difficult to mistrust them if there were not unfortunately counter evidence of the most convincing kind to show that the complaints concerning the character of sailors were in those times at least as loud and general as they are now. Indeed this sort of talk about the deterioration of service is not, it must be remembered, confined to the sea service. It is heard constantly with

respect to all employments and occupations; it pervades society; it occasionally fills the press; and there is some comfort in finding that it is at any rate as old as Shakespeare:

> "'Oh! good old man, how well in thee appears
> The constant service of the antique world,
> When service sweat for duty, not for need!
> Thou art not for the fashion of these times,
> When none will sweat but for promotion,
> And, having that, do choke their service up
> Even with the having.'"

The number of men employed in British ships in the home and foreign trades has been remarkably constant, though of late years there has been a slight tendency to diminution. Thus the recorded number in 1868 is 197,502, and in 1882, 195,937, while the year 1872 gave the highest number on record, viz., 203,720. Of the present strength, 48,000 are now employed in the home, and 138,000 in the foreign trade. The introduction of steam and its increased use on board ship account no doubt largely for this reduction in numbers; at any rate, the assumption that undermanning is the cause would not be easy to prove. Still the fact is sufficiently clear that in comparison with tonnage the crews are smaller than they used to be, and this leads to the conclusion that, if positive undermanning does not extensively exist, great efforts are steadily and continuously being made to economize labour to the utmost extent. The apparent increased employment of foreigners is also a matter which cannot escape notice. Though it is not, perhaps, as a certain gallant Captain asserted a short time ago, so large as 80 per cent. of the whole number employed, it is sufficiently large to be remarkable. Another curious and not altogether pleasant fact is the gradual diminution of apprentices. From 1850 to 1874 they had diminished from 5,055 to 4,445, and there is no sign that the number is likely to increase. "The shipowner teaches a lad his trade for little or nothing on the faith of a contract that, in the later years of the apprenticeship, when he has learned it, he will serve him at wages below the market price; but the trained apprentice finds his value in the open market, and with the facilities for desertion which exist in a sailor's life it is impossible for his master to keep him."

As to the condition of the merchant seaman, though of course circumstances vary much in different kinds of vessels, from an ordinary collier to a Cunard steamer, it is not to be doubted that a great improvement has been effected. The pressure of public

opinion, the zeal of shipowners, and the superiority in the class of officers employed, have had a distinct and definite effect in this direction. The sailor has, it is well known and generally admitted, shared in the improvement recognized in every class of society, and is now more thrifty, more steady, and a more responsible being generally than he formerly was. Legislation has done much, but current influence and general example have done more. In recent evidence it would seem that steamers show especially well in this way, being for the most part manned by men who are steady, sober, and rarely desert.

A few words on foreign merchant navies may be serviceably introduced, though the information is necessarily scanty and difficult to procure, that is in an authentic form. Thus between 1850 and 1870 it is shown that, while the British tonnage nearly doubled, the sea-going tonnage of the United States diminished. The French tonnage, which was a sixth of ours in 1850, was in 1870 less than a sixth. One nation, Norway, alone showed that she had increased her rate of tonnage faster than we had, for it became more than trebled between these dates. Again, whereas the British tonnage in the trade of the United Kingdom increased from 65 per cent. in 1850 to 68 per cent. in 1870, the tonnage of the States, which was 60 per cent. in 1850, was only 38 in 1870. French tonnage from 41 per cent. in 1850, diminished to 31 per cent. in 1870; Dutch from 42 was reduced to 28; Prussian from 49 to 46 per cent.; Swedish from 43 to 32; and Norwegian, in spite of its increase in shipping, was reduced from 75 per cent. in 1850 to 70 per cent. in 1870. To give a final quotation from the admirable report of Sir T. H. Farrer, from which these figures are taken: "And so it has happened in the case of all maritime countries except Great Britain. But in her case, with a trade far exceeding that of any other country, and increasing more rapidly than that of most countries, her shipping has not only continued to the same proportion of her own trade as it did before the trade was opened to other nations, but has increased that proportion. Nor is this all. The foreign trade of each foreign country has also increased very largely, and the native shipping of each foreign country no longer, as we see by the above figures, does the same proportion of her own trade as it formerly did. The proportion which native shipping no longer does must be done by the ships of some other flag * * * and the British flag has come in for the lion's share of it."

ROBERT MAIN.

THE OCCUPATIONS OF THE ENGLISH PEOPLE.

CHARLES KINGSLEY'S assertion—which almost deserves to take its place among the proverbs and aphorisms of the people—that "there is no room for idlers on God's earth," is unfortunately one of the noble sayings to which it is vain to expect universal adhesion, and outside the ranks of those whose means of livelihood is assured by property or endowment, there will ever be a vast fringe of the population which, by sheer viciousness, will not work. The law of England, assimilating as nearly as possible to a still higher law, makes it a condition of relief from the Poor Rates that if a man will not work he shall not eat, and the tramp who demands, of right, a night's lodging in the casual ward of the workhouse is required to do his task in the morning before he goes out; while, by a wise police regulation of recent date, still stronger pressure is put upon the professional idlers, at least in the metropolitan area, and repeated applications for a night's lodging involve a three days' detention in ward as a punishment. The result of this, a competent observer tells us, is, that tramps are not as numerous as they were. For a dozen years they have gradually diminished. So recently as 1872 there were in the metropolitan district thirty-seven casual wards open every night for the reception of men, women, and children, and these places night after night gave shelter to about 2,000 human beings. Thirteen of these wards have now been closed, and there are but twenty-four open, while only about 1,400 claim nightly shelter. But when all has been done that the wisdom of statesmen and the ingenuity of the police can devise, and when the moral influence of the pulpit, the press, and the stage has been brought to bear, there will still be a far from inconsiderable residuum of non-workers, of men and women who, although they have no share in what a nineteenth century statesman has termed "the unearned increment" on which to subsist, prefer to prey upon the vitals of the nation rather than "to earn a decent living." These idlers, who are included by the compilers of the Census with women, children, and persons possessing a competency, under the complimentary title of "the unoccupied class," it is somewhat difficult to enumerate with accuracy, and Sir Brydges Henniker holds that if absolute correctness could be attained, "the really idle portion of the

community would probably prove to be very small," but at the same time it exists, and it will be an interesting subject of study to watch how far and how soon the progress of education reduces its proportion to the toilers and moilers.

With this preliminary reservation we may with satisfaction accept the inference fairly deducible from the Census Reports of 1881 that the world of England is mainly a working world, and that even among the 182,282 "unoccupied males" of the age-period ranging from 20 to 65, a large number are engaged "in avocations which are none the less serious or less important because not recognised in the Registrar-General's classification, such as the management of estates and property, the direction of charitable institutions, the prosecution of literary or scientific research, or the other multifarious channels in which unpaid energy finds vent." From these, and such as these, the country unquestionably gains much "increment," for which it gives no wage, and it is only just that in any attempt to assess work done the volunteers should be allowed to take their place alongside the regular army. And it is well that we can accept this consolatory deduction, for, under any circumstances, the working population must always be weighted with the care and charge of a large fraction of the national family who by sex or age are unfitted to maintain themselves, and for whom breadwinners must be found. Taking the population of England and Wales in 1881 as 25,974,439, we find that 14,786,875, or 57 per cent., are returned as unoccupied, or, as it would probably be more just to describe them, pecuniarily non-productive. In former censuses the individuals whose occupations were returned to the enumerators in vague terms, as general labourers, artisans, apprentices, &c., or in terms the meaning of which was unknown, were included, by a strange freak of statistical eccentricity, in the "indefinite and non-productive class;" but in the Census of 1881 it was wisely resolved to transfer these persons to the industrial class. Hence we have under the "unoccupied class" a closer approximation to exactness, and it will doubtless astonish those who have given little thought to the subject to learn that such a large proportion as 57 per cent. of the population contributes little, if anything, in the way of money-spinning to the national revenues or the family purse. Possibly among the operative classes many of those returned as "wives" do, according to their opportunity, bring grist to the family mill, and for these a deduction might be made, but the broad fact meets us even then, that more than

half the people of England and Wales of all ages live on the fruits of the labours of others. In the first place, we have 8,936,851 children and young persons under 15 years of age, many of whom are not in reality unoccupied, but are preparing for the business of life in school or elsewhere, and this number it must be remembered is likely to be increased rather than diminished, for the evident tendency at the present time is to raise rather than to lower what is technically termed the school age. The next section of the 14,786,875 "unoccupied" persons is made up of 532,441 between 15 and 20 years of age, who were completing their preparation for "the great drama" of life, and of 676,393 of 65 years of age or more, a large number of whom are persons retired from business. We have thus accounted for 10,145,685, or about two-thirds of the non-workers, and still have 4,641,190 to deal with. Of these, 4,458,908 are women, of whom the greater part were married, while of the minority of the sex many might have been fitly returned as workers, because they are engaged in domestic duties or in assisting their fathers or other near relatives in business. It is thus obvious that the apparently large proportion of 57 per cent. returned as "unoccupied" must be subjected to many "discounts and allowances," and we seem to want a further class, to be added to the eight already supplied in the Census tables, which would remove even the appearance of idleness from those who are oftentimes the busiest bees in the great human hive.

Turning to the nature of the national occupations, we are at once met by the problem of classification. In regard to the great industries of the country, it is a case of division and subdivision all along the line, for not only are the subdivisions of work in each craft strangely minute but they vary in different localities. Added to this preliminary difficulty which besets the Census makers, there is a host of terms with which the persons who returned them as correct definitions of their daily toil were of course perfectly familiar, but which were naturally not a little puzzling to the clerks whose business it was to reduce the heterogeneous mass of employments to something like order. Here, for instance, is a small catalogue of some of the occupations given to the enumerators :—All-rounder, Barker, Bat-printer, Bandler, Bear-braker, Beatster, Blabber, Black-picker, Block minder, Bomb setter, Branner, Brazil maker, Budget bummer, Bull-dog burner, Bullet pitcher, Busheller, Butt woman, Buttoner-up, Camberel maker, Canbreaker, Carriage

straightener, Cheeker, Chevener, Chivier, Clapper carrier, Combwright, Coney cutter, Crowder, Crutter, Cullet picker, Cut looker, Cut-jack maker, Dasher, Dirt refiner, Doctor maker, Dogminder, Doler, Duler, Egger, Fagotter, Faster, Firebeater, Flatkeeper, Fluker, Footmaker, Forwarder, Gin maker, Glan rider, Grafter, Hackneyman, Hawk-boy, Horse marine, Hoveller, Idle back maker, Impression maker, Iron bolster maker, Keelbulley, Lasher, Learman, Lurer, Maiden maker, Marbler, Moleskin shaver, Muck roller, Notchturner, Off-bearer, Oliver man, Orange raiser, Painted Front maker, Pastefitter, Patent turner, Peas maker, Piano puncher, Ponty sucker, Ransacker, Riffler maker, Sad-iron maker, Sand badger, Scratch brusher, Shore woman, Sparable cutter, Spilch dealer, Spittle maker, Spragger, Sprigger, Swift builder, Tawer, Temple maker, Tharme maker, Thimble picker, Thurler, Tingle maker, Toother, Townsman, Trowler, Walkflatter, Westerman, Wheel glutter, Whim driver, Whitster. To enable the clerks engaged at the central office in making the abstracts from the local returns to carry out their duties a new dictionary of names of occupations was made—the old dictionary hitherto used, which seems to have been based on the classifications of the London and provincial trade directories, having become obsolete. This task of dictionary-making—a veritable Census within the Census—formed no light addition to the work of the compilers, and its performance has naturally added very largely to the accuracy of the tables, and in a corresponding degree to their value. To carry out this part of the Census, circulars were sent to leading manufacturers in every district asking for information, and after their returns had been compared with particulars from other sources, a total of between eleven and twelve thousand separately named occupations was reached, being nearly double the number in the former dictionary, which contained almost exactly 7,000 titles. This legion of names, the number of which may be ascribed partly to the development of new industries, and partly to the application of nicknames which have but an ephemeral or local existence, was reduced at the Census Office to 400 headings, and these again were divided into sub-orders and classes. As an illustration of the difficulties encountered in classifying, we may mention that in some parts of the country identical titles are very differently applied. Among the double meanings we select the following: *Clothier* for Clothmaker or Clothes-dealer; *Bricksetter* for Bricklayer or Brickmaker; *Bank*

Manager for Head of a money bank or a Miner superintending at the pit's mouth ; *Drummer* for a Musician or a Blacksmith's hammer man ; *Muffin Maker* for a maker of tea-cakes or the maker of a muffin in China manufacture ; *Collar Maker* for a Seamstress or Harness Maker ; and *Book Case Maker* for a Cabinet-maker or Bookbinder. Another complication is supplied by the existence in several trades of the same sub-titles. In the Cotton, Silk, Wool, and Flax Factories alike there are Spinners, Weavers, Warpers, and Winders ; while in many industries there are Backers, Ballers, Benders, Binders, Bleachers, Blockers, &c. Fresh difficulties are caused by the return of double occupations, as, for instance, a Clergyman-Schoolmaster. Yet another question arises when the age may almost be said to contradict the description given of the employment, as where boys under fifteen describe themselves as railway guards, authors, and journalists, but in this case of course the enumerator can only accept what is given to him and make the best of it.

Having cleared the ground of these initial difficulties the Census-makers proceeded to the great work of Classification, adopting the following six chief heads : Professional, Domestic, Commercial, Agricultural, Industrial, and Indefinite or Non-productive. Arranged under these titles the Population of England and Wales (25,974,439) on the 4th April, 1881, stood thus :

Class.	Male.	Females.	Total.	Per cent. of Population.
Professional	450,955	196,120	647,075	2·5
Domestic	258,508	1,545,302	1,803,810	6·9
Commercial	960,661	19,467	980,128	3·8
Agricultural	1,318,344	64,840	1,383,184	5·3
Industrial	4,795,178	1,578,189	6,373.367	24·5
Indefinite and non-productive .	4,856,256	9,930,619	14,786,875	57
Total	12,639,902	13,334,537	25,974,439	100·0

The *Professional Class*, which forms 2·5 per cent. of the population of all ages, includes every variety of "profession," from the State dignitary to the mountebank, while not a few of the terms employed, like the word "artist," are so essentially generic that they convey little, if any, definite meaning. The Civil Service claims 50,245 persons of all grades, of whom 4,353 were females. The Police Force numbers 32,508, being an increase of 17 per cent. on 1871, and affording one policeman to every 799 of the total population. The Army serving at home, including

the yeomanry, militia, and 8,572 pensioners, numbered 87,168, but the entire military force at home and abroad is returned at 186,428, of whom 128,856 were of English birth, 15,177 Scotch, 39,471 Irish, and the balance, 2,924, of foreign or colonial extraction. The Clergy of the Established Church number 21,663 in the table, but many more are classed as teachers, and from an independent authority—the Clergy List—the number of men in Holy Orders would appear to be about 24,000. The Roman Catholic Clergy are given at 2,089 against 1,620 in 1871, an increase of 29 per cent.; whereas the Protestant Nonconformist Ministers only show an increase of 4 per cent., standing at 9,734 against 9,334 returned in 1871. Adding to these clergy and ministers the Missionaries, Scripture readers, and Sisters of Charity who have increased by 42 per cent., and the Nuns and Sisters of Charity who have increased by 50 per cent., we find that on the whole body of professional religious workers there is an increase from 1871 to 1881 of 14·7 per cent., being in almost the same ratio as the increase of the population. In the legal world, made up of 17,386 barristers and solicitors—the Census, by a strange and we cannot but think a mistaken combination, draws no distinction between these essentially separate branches of men learned in the law,—1,653 law-students, and 24,602 law clerks, the whole professional rank and file has increased in ten years by 23 per cent. The medical men returned as practising in England and Wales number according to the Census 15,116, but on the Medical Register at the same date were 22,936 names, the difference consisting of the physicians and surgeons practising abroad. The increase in the number enumerated in 1881, as compared with 1871, only amounted to 3 per cent., but by a strange coincidence the number of dentists had risen relatively to their professional brethren to a far larger extent, from 2,466 in 1871 to 3,583 in 1881, a growth of 45 per cent. This anomaly is only to be explained on the assumption that some of the dentists who in 1871 had classed themselves as general practitioners determined, after the passing of the Dentists' Act in 1878, to stand under the latter title. If to the medical men, including the dentists, we add the medical students, assistants, and midwives, and 37,147 persons engaged in minor duties, most of whom are nurses, we have a total of 64,548 employed in the application of the "healing art," exclusive of 19,000 chemists and 1,511 surgical instrument makers. Education gives employment to 171,831

persons, of whom nearly three-fourths are women, and here we see at once the result of Mr. Forster's Act of 1870, which, by creating the School Board system and stimulating the voluntary schools, caused an immediate and largely increased demand for teachers at higher salaries than had hitherto ruled, the number under the same head in 1871 being 124,597, thus showing an increase in the ten years equal to 38 per cent. As a side light on this branch of the subject, the Registrar-General notes that the proportion of persons to the population of England and Wales who were unable to write their names showed a reduction from 40 to 20 per cent. in the ten years ending with 1880. Among other workers numbered among the professional classes we find organ-grinders, who are included as musicians; the total number of "artists and other persons who," according to the writer of the Census letter-press, "were ministers to our amusement," were 25,546—an increase of 38 per cent. on 1871. The fact that this strange agglomeration of beings, whose gifts and occupations are as distinct as those of Sir George Macfarren and the Hatton Garden Italian who turns the handle of the so-called organ, or piano-méchanique, is still adopted by the Census compilers, seems to show that some re-adjustment of the classification is necessary, and it may also be questioned whether in a document issued by a Government department as the basis for deductions of far reaching importance "musicians" ought simply to be described as persons who "minister to our amusement." This, at any rate, is only half the truth, and music in these days surely deserves to be put on a higher level. In another department of what might, perhaps, be classed as public entertainers, we find that actors and actresses have increased by 30 per cent. upon the number at work in 1871, while persons managing exhibitions and professional game-players have risen by 60 per cent. Remembering that the decade has witnessed considerable depression in agricultural and commercial circles, this increase of supply may, if it is regarded as a response to a real demand, excite some surprise. Photography stands out among the minor arts as giving employment to 6,661 persons—an increase of 1,946, or 40 per cent. on 1871.

Turning to the *Domestic Class*, we find that various transpositions have been made in the arrangement of occupations under this head. In 1871 innkeepers and beersellers who provide board and lodging were included, but are now transferred to the industrial class, while in their place the laundry

workers, who were classed as makers of dress, are brought in as contributors to domestic comfort. Home and house service still offers occupation to a very large section of the people, the indoor servants being 1,286,668, exceeding the agricultural labourers, who stand next in order of number, by 50 per cent. As might be expected, the number of domestic servants in proportion to the population varies considerably. In the larger and more fashionable towns, it shows a high ratio—1 to 15 in London, 1 to 11 in Brighton, 1 to 9 in Bath, while in the eastern agricultural counties it stands at 1 to 21, and in the manufacturing and mining districts still lower, being 1 to 28 in Staffordshire, 1 to 30 in Lancashire, and 1 to 31 in Durham. For each male indoor servant there are 22 females. As the keeping of servants is usually accepted as an indication of prosperity, the fact that the increase under this head only amounted to 1 per cent. during the ten years 1871–81, while the population increased more than 14 per cent., can scarcely be said to be satisfactory, although the Registrar-General may possibly be correct in his surmise that it is partly due to the difficulty of obtaining servants; and this, again, may be referred, not unjustly perhaps, to the efforts made to promote emigration.

The *Commercial Class* yields a total of about a million persons, of whom one-third are engaged as proprietors in the actual work of commerce, while two-thirds are performing the subordinate tasks of conveyance and storage. Among the factors which go to make up this important class of the community are 10,359 merchants; 35,478 commercial travellers (twice as many as in 1871); agents, brokers, and factors, 31,208; bankers, 16,055, including bank clerks, an increase of 35 per cent. on the total of 1871; and persons engaged in insurance business, 15,068, a rise of 9,381, which is explained in the following scarcely satisfactory note: "This enormous apparent increase naturally leads us to suppose that the method of tabulation must have differed in 1871 from that pursued in 1881, but we can find no evidence that such was the case." Among minor occupations which would scarcely seem at first sight to be "commercial," is that of persons engaged with road traffic, but on examination we find that it includes road contractors and makers, proprietors of horses, carriages, and omnibuses, and turnpike keepers, the last of whom are gradually dying out, as the "trusts" are being closed, and the gates removed. What is termed "Tramway Service,"

a new form of industry, gives employment to 2,650, as against 63 in 1871, and the making of the bicycles and tricycles which in 1871 only employed 12 persons, now occupies 1,072, chiefly in Coventry. The railway industries have a force of 207,007 men, including the makers of the lines and carriages, and the servants of the companies, the last of whom contribute 139,408 to the total. Those who maintain the water traffic number 306,423, including 199,974 men, or two-thirds of the whole, who are employed in the Merchant Service, or engaged as bargemen and lightermen.

The *Agricultural Class* consists of 1,383,184 individuals, a decline of 8·2 per cent. on 1871; but here, again, we have to introduce a qualification, for included under the main head we have 104,560 persons "engaged about animals," many of whom, and especially the fishermen, are in no real sense agricultural. Exclusive of these the agriculturists numbered 1,278,624, showing a decline of 9·3 per cent. since 1871. Among the sub-heads the number of farmers and graziers shows a decrease from 249,907 to 223,943, equal to 10·39 per cent.; and even allowing for the inclusion of retired farmers in the tables of 1881—a departure from the rule of 1871—the fall is equal to more than 8 per cent. The reduction in the number of farmers was accompanied, as was to be expected, by a rise in the number of bailiffs, from 16,476 in 1871, to 19,377, or nearly 18 per cent. There was a slight decline in a group of persons whom the Registrar-General describes as a kind of upper farm labourers—the sons, grandsons, and nephews of farmers returned as living in the farmhouse, and yet not stated to have had any definite occupation; the number of such persons falling from 76,466 in 1871 to 75,197 in 1881. Among the men working on farms or in agricultural pursuits there was a reduction from 981,988 in 1871 to 870,798 in 1881, showing a fall of 91,550, or nearly 10 per cent. In explaining this the increased use of machinery in agriculture in place of hand labour may be allowed some weight, and as the number of persons engaged as makers of, or attendants on, such machines was 4,260 in 1881, against 2,160 in 1871, it will partially account for the fact that the proportion of labourers to 100 acres had fallen from 3·95 to 3·45. Under all other heads the number of men returned as labourers showed a considerable increase, but the reduction in the agricultural army so far counterbalanced it as to leave the labourers' list

at each end of the ten years almost stationary. The following table brings out the fact:—

Class of Labour.	1871.	1881.
Agricultural	962,348	870,798
General	506,273	559,769
On Railways, and Platelayers	44,169	58,847
On Roads	8,136	10,947
Total	1,520,926	1,500,361

Remembering that the general population rose by 14·36 per cent., this shows that if the labourers had increased in the same ratio the total would have stood at 1,739,377. The men engaged in horticulture either in the private garden or the market garden showed a marked increase of 24 per cent., the total, including nurserymen and seedsmen, having risen from 119,807 to 148,285. The fishermen, who, to adopt an Irishism, included 294 women, numbered 29,696, and 12,519 persons occasionally engaged in the work. The Cornish and Lincolnshire coast stand first with 4,400 and 4,357 respectively, and are followed by Suffolk with 2,763, the East Riding with 2,003, Devon with 1,826, Kent with 1,793, and Sussex with 1,473.

The *Industrial Class* forms the largest and most important division of the working population. It practically resolves itself into the mass of workers not already enumerated under the professional, domestic, commercial, and agricultural classes, and outnumbers them when they are all combined. It consisted on the Census night of 1881of 6,373,367 persons, being one-fourth of the total population of the country, and more than one-half (57 per cent.) of the whole body of workers with brain and hand. The increase on the class in the ten years 1871–81 was equal to about 11 per cent., or 3 per cent. less than the growth of the population. Those who feed the nation with literature, either in the form of books, magazines, or newspapers, form an important section of the class, but a contingent of brain workers must be brought over from the professional class in order to make the record of literary activity complete. It then stands thus:—

Brain-Workers.

Authors, Editors, and Journalists	3,434	Scientific workers	1,200
Shorthand writers and reporters	2 677	Librarians, &c.	1,083
Total	8,394		

Paper and Stationery Makers.

Rag collectors and dealers	3,291	Paper makers	18,629
Steel-pen makers	2,723	Pencil makers	232
Stationers	15,241	Envelope makers	2,108
Total	42,224		

Printing Trades.

Printers	61,290	Lithographers, &c.	6,721
Engravers	2,265	Type founders	1,169
Total	71,445		

Bookbinders, Publishers, Newsagents, &c.

Binders	20,097	Publishers and librarians	9,910
Newsagents	5,515	Miscellaneous paper sellers	1,440
Total	36,962		
Grand total	159,025.		

The increase during the decenniad 1871–81 in the various crafts represented in this table amounted to 13·3 per cent. among the paper makers; 39·6 per cent. among the printers; 32·5 per cent. among the binders; 30·7 per cent. among the stationers; and 7·7 among the publishers, booksellers, and librarians. In the other divisions of the industrial class, we have makers of machines and implements, 267,976; makers of machinery, 160,797; tool and implement makers, 48,556; makers of clocks, watches, and scientific instruments, 32,064; makers of guns and weapons, 8,227, a decline of 45 per cent. on 1871; workers in the building trades, 673,636, a growth of 21 per cent. in the ten years; stone, slate, cement, brick, and tile workers 105,544, an increase of 29 per cent.; furniture trades, including upholsterers and carpet makers, 124,355, as compared with 106,108 in 1871, an increase of 17 per cent.; glass and earthenware makers, 74,407, an increase of 8 per cent. The purveyors of animal food numbered 81,702; of bread and vegetables, 159,608; groceries, 134,397; spirituous drinks, 135,158. On this last head the comparison with 1871 shows an actual decline of 5·8 per cent., but allowing for the growth of population, the army made up of hop dealers, maltsters, brewers, innkeepers, publicans, beer sellers, wine and spirit merchants, and cellarmen, showed a reduction of 17·7 per cent. in the ten years, while all the food trades had increased in proportion to the population. The theory that smoking and drinking move together is contradicted by the fact that while the drink trades had fallen off, the number of persons dealing in tobacco and smoking apparatus stood at 22,175 in 1881, more than 34 per cent. in excess of 1871. The persons returned as working and dealing in textile fabrics numbered 1,053,648, or, in round numbers, a million. In cotton manufacture the number of operatives shows a steady and progressive increase since 1861 on the female side, but a reduction among the males,

as the following figures—which are exclusive of the printers, dyers, warehousemen, and dealers—will show:—

	1861.	1871.	1881.
Males	202,540	192,881	189,651
Females	264,166	286,258	310,374
	466,706	479,139	500,025

The linen industry is returned as giving employment to 44,144 persons, of whom 32,785 were females. This is a considerable reduction on the figures of 1881, when the total number was 48,383, the explanation given by the Registrar-General being that the pillow-made or bone lace made by hand machines is now made by water or steam power, and this is confirmed by the returns under the various counties, which show that the general reduction is made up in those districts where the hand-made lace was formerly produced. In Nottinghamshire, on the contrary, where lace is made by machinery, there was an increase from 16,620 in 1871, to 22,228 in 1881. The hosiery, woollen, and cloth manufactures show a reduction in the number of hands, the worsted stuff and blanket industries remained stationary, and the carpet manufacture had considerably increased. In the silk manufacture and in the boot trade there was a decline in 1871–81 as compared with 1861–71. On the number of miners working in coal, tin, and lead mines there was an increase of 24 per cent. in 1881, as compared with 1871.

The growth of *Female Industry* in its various forms, from the more intellectual employments down to the humble and even mechanical vocations, may be said to be the most striking feature in the Census of 1881. The number of males returned as engaged in some definite occupation is 7,783,646, being 71·5 per cent. of all the enumerated males above five years of age, while the number of females similarly returned is only 3,403,918, but if, as we pointed out at the beginning of our paper, we credit the wives with a share in the world's work, we at once add 4,437,962 to the total, and thus establish an equilibrium between the occupied men and women. In some cases the women are evidently jostling the men, and in a few instances where the men were in a majority in 1871 the tables have been turned, not only metaphorically but literally, and the ladies are at the

head of affairs. The actresses, for instance, who were less numerous than the actors in 1871, now stand as 2,368 to 2,197. In the associated trades connected with printing and publishing female labour is being used to supplant male work, as will be seen from the following statement of the proportion of females to every 100 males employed in each industry in 1871 and 1881:—

	1871.	1881.		1871.	1881.
Paper Manufacturer . .	65	80	Stationer	34	53
Printer	2	4	Bookseller, publisher, &c.	15	17
Bookbinder	95	111			

In envelope making, which has always been women's work, the men are losing the small share of the ground which they once held, for whereas in 1871 there were 1,012 females to every 100 males employed, in 1881 the proportion had risen to 1,105. The women keep the steel pen making almost entirely in their hands, the proportion of workers being 1,138 females to 100 males. In cotton manufacture the use of female labour is increasing. In 1861 there were 130 females to 100 males; in 1871 the proportion was 148 to 100, and in 1881 it stood at 164, while in this industry not only has the relative proportion of the sexes been reduced, but the actual number of men has declined. In the hosiery trade, also, the ladies are gaining ground, and they contrived in the last decade exactly to invert the figures of 1871. At that date the males employed were 114 to 100 females; in 1881 the women were 114 to 100 men. In the woollen cloth trade the same tale is told. In 1871 the females employed in it were far more numerous than the males, but in 1881 the males were outnumbered, and the proportion stood as 102 females to 100 males, and in the worsted manufacture the proportion of females had risen from 162 to 100 males in 1871 to 180 to 100 in 1881. In the carpet trade and in silk manufacture the tables show a similar growth. The number of females aged five years and upwards employed in the principal occupations in which women engage stand as follows:—

Teaching.	123,995	Agriculture.	64,171
Nursing, &c.	37,821	Textile industries	590,624
Lodging-houses	32,890	Dressmaking	616,425
Domestics	1,258,285	Other industries	392,690
Laundry	287,017		
Total.	3,403,918.		

CHARLES MACKESON.

THE VOICE OF ANIMALS.

"No animal," observes the Stagyrite, "can talk without lungs, and none by any other part than the larynx. Speech is voice articulated by the tongue. Sound, modulated by the larynx, will give the vowels. The tongue and the lips are necessary to produce consonants, and these two constitute articulated words." The human race have this faculty of speech in a special but not exclusive sense. The human larynx alone is said to be capable of making some sixteen thousand different movements, but when the respiratory muscles and other auxiliaries are taken into account the number of alterations in the relative position of the vocal organs becomes almost incalculable. The voice of reptiles and amphibious animals is produced in the larynx, but there is a great variety in the form of their vocal organs. In reptiles the males possess them in a more highly developed state than the females, whilst in comparison with the mammalia they can only be regarded as rudimentary. The croaking of the frog is the result of the vibration of the cords. Serpents are destitute of those instruments, and their characteristic hiss is produced by air passing through the narrow aperture of the glottis. In the nocturnal lizard, known as the gecko, the cords are in better condition than in the crocodile, and the voice is correspondingly more powerful.

Insects employ more than one method for the production of sound. Stridulation is rather the action of the musician than of the singer, but in each case the object may be fairly assumed to be the expression of emotion if not the conveyance of information. The well-known cry of the Death Watch, long an object of dread to the superstitious, is caused when that insect, the *Anobium*, strikes a hard substance with the shield or forepart of the head. Huber states that the *Sphinx atropos* will sometimes with impunity plunder a hive of bees, and he conjectures that it possesses the same faculty as the queen bee of uttering a sound which apparently paralyses them. He records that on the introduction of a strange queen to a hive the bees were about to attack her when she uttered a certain sound, and they all held down their heads abashed and motionless. The Brazilian *cicada* has a voice of such strength that it can be heard a mile off, "which," observes Dr. Carpenter, "is as if a man of ordinary

stature possessed a voice that could be heard all over the world." Dr. Hermann Burmeister showed by a series of careful experiments the error of the idea previously entertained by naturalists that the buzzing of insects was caused by the vibration of the wings. The sound, however, continued even when the wings were cut away. He found considerable variations, and the tone of the common gad-fly ranged from C to G flat as the effort to extricate itself from the hands of the investigator increased or lessened. Burmeister shows that the sounds are due not wholly to friction but to the rapid passage of air through the vents in the thorax. The same mechanism which produces the action of the wings produces rhythmical contractions and expansions of the whole thorax and of the many air-canals which it contains. "There is, therefore, connected with the motion of the wings a constant proportionally rapid and intensitive breathing, and this breathing is the cause of the sound." It is a curious fact that Aristophanes pokes fun at Socrates for attempting this very investigation. That some species of ants are susceptible to sound is shown by the method used in parts of Central Africa for their capture. Two maidens seated near the anthill beat with sticks upon an inverted gourd in cadence to a song, thus seducing from its safety the unwary ant, which was then seized for food. Sir John Lubbock, who has made many interesting experiments, has never satisfied himself that ants, wasps, and bees heard any of the sounds with which he tried them. Nor could he distinguish even by the microphone any vocal communication between the ants. He adds this suggestive observation :—"It is, however, far from improbable that ants may produce sounds entirely beyond our range of hearing. Indeed, it is not impossible that insects may possess senses, or sensations, of which we can no more form an idea than we should have been able to conceive red or green if the human race had been blind. The human ear is sensitive to vibrations reaching at the outside to 38,000 in a second. The sensation of red is produced when 470 millions of millions of vibrations enter the eye in a similar time, but between these two numbers, vibrations produce on us only the sensation of heat, we have no special organs of sense adapted to them. There is, however, no reason in the nature of things why this should be the case with other animals; and the problematical organs possessed by many of the lower forms may have relation to sensations which we do not perceive." There are in the antennæ certain structures which may be auditory

organs, and Lubbock has satisfied himself that this is the case with grasshoppers.

It has been well remarked that insects which produce sound by friction are musicians and not singers, but Goureau who makes the distinction adds that insects make use of their voices to communicate certain sensations.

Fishes are generally regarded as dumb, but there are many exceptions to this rule. The pogonia has been called the *tambour*, from its habit of producing continuous sounds when in the water. Dufosse, as the result of numerous dissections, came to the conclusion that the males only have air bladders capable of emitting sounds by the help of moveable bones. The females he holds to be destitute alike of bones or muscles to press on the bladder so as to give out sounds at will.

Mr. S. E. Peal, writing in *Nature*, says that whilst drifting in the Rob Roy canoe on a pool called Deo Dubé, in the Disang river of Eastern Assam, he became aware of a large number of Mahsir (*Barbes macrocephalus*) moving about the water. "Sitting perfectly still, I had the pleasure to see them gradually approach the surface and move about me at a foot or so distant, passing alongside, under, and round the canoe, carefully examining it, bow and stern specially. It may not be easy to guess a fish's *thoughts*, but from the manner in which they examined my symmetrical and grey-coloured canoe, they appeared to think it might possibly be a huge fish, and dead, of course. While watching their movements I was aware of a peculiar "cluck," or percussive sound—frequently repeated, on all sides, and coming from below, but close to me. Eventually I found that this was made by the Mahsir, and one—passing close along my right by itself, made several *distinct* sounds as it went on—that seemed answered by others to the left. If seated, say on the bank, the sound would be loud enough to be heard at 40 feet distance. A large bivalve which sings loudly in concert is common in some parts of Eastern Assam. A small *ant* also makes a peculiar thrice-repeated noise by scraping in unison on the dry leaves of its nest if it is disturbed."

The vocal organs of man are most closely approached by the mammalia. The structure of the larynx and the mode of producing the voice is nearly the same. There are some mute animals, such as the armadillo and the giraffe. "The intensity of voice," observes Dr. Hunt, "is in some animals much increased by peculiar organs of resonance. Some of the howling

monkeys of America, although by no means of a large size, possess voices which may be heard at a distance of a couple of miles. This power is owing to certain pouches connected with the larynx, and to a large drum-like development of the hyoid bone."

Leibnitz has left a notice of a dog which could articulate. It was a common mastiff, and lived in 1715 at Zeitz, in Saxony. A boy with plenty of time on his hands having noticed a real or fancied resemblance in its barking to certain words, thought he would develope this unlooked-for talent. He bestowed great pains upon his canine pupil, who, when at the height of his endeavours, could pronounce about thirty words, mostly German, but including some French terms, as *thé*, *caffé*, *chocolat*, *assemblée*. The words were not spoken spontaneously, but repeated after the dictation of his instructor, and the dog appeared to do so against his will. The animal was about three years old when first taught, and it took some years to indoctrinate him with the thirty words. The story is a very curious one, but not unparalleled, for there is said to have been a speaking dog at Berlin in 1718, which could pronounce sixty words. In the same year an Austrian is said to have exhibited a dog in Holland which could utter all the letters of the alphabet except *l*, *n*, and *m*. M. A. Roujon tells of a dog that can pronounce the words *ma*, *maman*. Considering the intelligence of dogs, it is perhaps a matter of surprise that such stories are not more common. It has been suggested that the cause may be the difference in structure of the vocal organs. At all events, the lower mammalia do not learn human speech. It is the parrot, and not the monkey, that learns to talk. This has struck the observant negro, who is said to have a theory that the monkey can speak, but will not do so, lest he should be made to work. If the monkeys had arrived at this generalisation, they would soon find that even the mutes must do something in the complex organisation of civilised life. It is clear, however, that in addition to the possession of certain physiological and mental characteristics, an animal must be in close contact with man before he can be expected to become familiar with his speech. It is evident that the animals that would appear most promising for such an experiment are not available for the purpose, they do not increase in captivity, and hence the hereditary influences of selective development carried on for generations are entirely absent. It is gravely doubted by some whether

the birds which imitate the speech of man have any perception whatever of the meaning of the words they use. Do they employ their phrases with definite purpose and intention, or do they merely reproduce what they hear, as a boy may imitate the quack of a duck, or the grunt of a pig? A writer in the *Journal of Science* recites the case of a parrot which always preferred the petition "Give Polly a bit, if you please," when she saw that food was being prepared, but did not offer that observation at any other time. He also mentions a magpie at Stowmarket which knew and used with accuracy the names of several members of the family. The Abbé Gras has two parrots that use general phrases with strict appropriateness. When a supply of seeds is given to Coco, she cries "Here is something good." If her companion screams, she says "Come, Cocotte, don't scream; sing." If her request is complied with, she patronisingly observes, "You sing well; oh, very well!" M. Gras was giving some directions to his housekeeper, when Coco interjected, "How, don't you understand?" Intelligent parrots occasionally vary their phrases, and, like children who are learning to talk, never speak of themselves in the first person. The child calls itself "Baby," as the parrot styles itself "Polly." The bird and the child alike puzzle and blunder in conning over a new phrase, and have especial difficulty in mastering the final part of the sentence. Locke has told the story of the bird of Prince Maurice. "I had a mind to know from Prince Maurice's own mouth the account of a common but much credited story, that I had heard so often from many others, of an old parrot he had in Brazil during his government there, that spoke and answered common questions like a reasonable creature, so that those of his train there generally concluded it to be a witchery and possession, and one of his chaplains, who lived long afterwards in Holland, would never, from that time, endure a parrot, but said they had all a devil in them. I had heard many particulars of the story, and assevered by people hard to be discredited, which made me ask Prince Maurice what there was in it. He said, with his usual plainness and dryness of talk, that there was something true, but a great deal false, that had been reported. I desired to know of him what there was of the first. He told me he had heard of such an old parrot when he came to Brazil, and though he believed nothing of it, and it was a good way off, yet he had so much curiosity as to send for it; that it was a very great

and very old one. When it came first into the room where the Prince was, with a great many Dutchmen about him, it said presently, 'What a company of white men are here!' They asked it what that man was, pointing at the Prince. It answered, 'Some general or other.' When they brought it close to him, he asked, 'D'où venez-vous?' It answered, 'De Marinnan.' The Prince: 'De qui êtes-vous?' The parrot: 'A en Portugais.' Prince: 'Que fais-tu là?' Parrot: 'Je garde les poules.' The Prince laughed, and said, 'Vous gardez les poules?' The parrot answered, 'Oui, je le sçais bien faire,' and made the chuck four or five times which people use to make to chickens when they call them. I set down the words of this worthy dialogue in French, just as Prince Maurice said them to me. I asked in what language the parrot talked; he said in Brazilian; and he had taken care to have two interpreters with him, the one a Dutchman that spoke Brazilian, the other a Brazilian that spoke Dutch; that he asked them separately and privately, and both agreed in telling the same thing the parrot said."

Colonel O'Kelly had a wonderful parrot, which, it is said, could sing "The Pretty Girl of Derby" with correct tune and articulation. The story of the convent parrot has become famous in literature by Gesset's story of "Vert Vert" (p. 23). A parrot which had been kept in a nunnery was so well educated by some pious sisters that it could say its *Pater-noster* and sing many short Psalms quite correctly. Its fame was spread far and near, and the sisters of a neighbouring nunnery borrowed it for the day of celebration of their patroness saint. Much talk had passed about the astonishing piety of Poll, and some believed it was inhabited by a good spirit. Two days before the appointed day of the festival it was committed to the hands of some sailors, to take it carefully in its cage down the river in their passage-boat. Here it paid close attention to the language of the boatmen and other low passengers, and so well caught all their ribaldry that, when all the nuns and their friends were waiting to receive the pious visitor, and were expecting the purest devotional salutations, what was their surprise to hear the foulest language of the most abandoned profligates! "What wicked, horrible wretches must be the sisterhood who instructed it!" they cried; "Send it back, send it back to the detestable creatures? O where could they themselves have learnt such abominable obscenity!" Duret has collected some curious instances. At the court of Henry II, of France, there was a

paroquet which, with very distinct pronunciation, recited several of the Psalms in the French version. Cardinal Ascanio had one which would go right through the Creed, beginning with "Comme si c'e eust esté un homme docte et sçauant." It has been said that parrots taught to repeat the party cries were in great demand during the American Presidential contest. Pliny says of the parrot, "It will duly salute an emperor, and pronounce the words it has heard spoken." It is of a parrot that Campbell has told this striking incident:—

The deep affections of the breast
That Heaven to living things imparts,
Are not exclusively possess'd
By human hearts.

A parrot, from the Spanish Main,
Full young, and early caged, came o'er
With bright wings, to the bleak domain
Of Mulla's shore.

To spicy groves where he had won
His plumage of resplendent hue,
His native fruits, and skies, and sun
He bade adieu.

For these he changed the smoke of turf,
A heathery land and misty sky,
And turn'd on rocks and raging surf
His golden eye.

But, petted, in our climate cold,
He lived and chattered many a day,
Until with age, from green and gold
His wings grew grey.

At last, when blind and seeming dumb,
He scolded, laugh'd, and spoke no more,
A Spanish stranger chanced to come
To Mulla's shore.

He hailed the bird in Spanish speech,
The bird in Spanish speech replied,
Flapp'd round his cage with joyous screech,
Dropt down, and died.

Barrington mentions a linnet that could say "Pretty boy;" and Bewick says, "We have heard a jay imitate the sound made by the action of a saw so exactly, and though it was on a Sunday, we could hardly be persuaded that the person who kept it had not a carpenter at work in his house." The ancients were so convinced that birds and beasts had an intelligible language of their own, that they freely attributed a knowledge

of it to some sympathetic spirits. Apollonius of Tyana was one supposed to be versed in these mysteries. It is certain that the ancients paid more attention to the teaching of birds than has been given to it in later ages. Moschus speaks of nightingales and swallows which had thus been instructed. The Empress Agrippina, the wife of Claudius, had a thrush which could imitate human speech, and Pliny, in recording the statement, adds that when he was writing "The young Cæsars—that is Britannicus and Nero—have a starling and some nightingales, that are being taught to talk in Greek and Latin." "For this purpose," he says, "the birds are kept secluded, one person only being with them, and continually repeating the words they are to learn, and encouraging them by giving them food." Starlings have remarkable mimetic powers. Pliny has also a remarkable narrative of a raven which every morning saluted the great men in the Forum. It was killed by a shoemaker, who was soon after put to death, and the bird honoured by a public funeral. The cry of the crow, the owl, the raven, have in many ages been regarded as portents of evil. That the birds and other animals use their voices for social communication can hardly be doubted. Many anecdotes have been recounted illustrative of this power, so closely allied to language. Miss Bird, in her amusing book on Japan, says that in the inn-garden at Mori, she saw a dog eating a piece of carrion in the presence of several of these covetous birds. They evidently said a good deal to each other on the subject, and now and then one or two of them tried to pull the meat away from him, which he resented. At last a big strong crow succeeded in tearing off a piece, with which he returned to the pine where the others were congregated, and after much earnest speech they all surrounded the dog, and the leading bird dexterously dropped the small piece of meat within reach of his mouth, when he immediately snapped at it, letting go the big piece unwisely for a second, on which two of the crows flew away with it to the pine, and with much fluttering and hilarity they all ate, or rather gorged it, the deceived dog looking vacant and bewildered for a moment, after which he sat under the tree and barked at them inanely. A gentleman told Miss Bird that he saw a dog holding a piece of meat in like manner in the presence of three crows, which also vainly tried to tear it from him, and after consultation, two went as near as they dared to the meat, while the third gave the dog's tail a bite sharp enough to make the

animal turn round with a squeal, on which the other villains seized the meat, and the three fed triumphantly upon it on the top of the wall.

That birds are taught notes by their progenitors is now generally recognised as most probable. "Notes in birds are no more innate than language is in man, and depend entirely upon the master under which they are bred as far as their organs will enable them to imitate the sounds which they have frequent opportunities of hearing." Here we may recall the interesting experiments made by Barrington. "I have educated linnets," he says, "under three of the best singing larks—the skylark, woodlark, and titlark—every one of which, instead of the linnet's song, adhered to that of their respective instructors. I had some curiosity to find out whether an European nestling would equally learn the note of an African bird; I therefore educated a young linnet under a vengolina, which imitated its African master so exactly, without any mixture of the linnet's song, that it was impossible to distinguish the one from the other. The vengolina linnet was absolutely perfect, without ever uttering a single note by which it could be known to be a linnet. Every one knows that the common house sparrow in its natural state does nothing but chirp; this, however, does not arise from want of powers in this bird to imitate others, but because he only attends to the parental note. But to prove this decisively, I took a common sparrow from the nest when it was fledged, and educated it under a linnet; the bird, however, by accident heard a goldfinch also, and his song was therefore a mixture of that of the linnet and goldfinch."

It has been objected that Barrington's experiences are not conclusive except as to birds in a state of captivity. The peculiar love note of each bird is regarded by Montagu as an unerring mark by which each bird discovers its own species. A goldfinch, he observes, though hatched and fostered by a chaffinch, retained its notes. "We have every reason to believe it is necessary that there should be native notes peculiar to each species, or the sexes might have some difficulty in discovering each other, the species be intermixed, and a variety of mule birds produced, which last, we believe, never happens in a state of nature." The various stages of the voice of birds must be considered in this controversy.

Barrington says, "The chirp is the first sound heard from a young bird, and this characteristic note may be easily distinguished in each species. It is very weak and tremulous, and

dropped entirely as the bird grows stronger ; nor is it afterwards intermixed with its song, the chirp of a nightingale, for example, being weak and disagreeable. The call is that sound it is able to make at a month old. It is a repetition of the same note, and is retained by the bird as long as it lives, and is common generally to both cock and hen. The next stage is called by the bird-catchers *recording*, and may be compared to the imperfect attempt of a child to babble. Some will record at a month old. The first essay does not seem to have the least elements of the future song, but as the bird grows older and stronger one may begin to perceive what the nestling is aiming at. Whilst the scholar is thus endeavouring to form his song when he is once sure of a passage he commonly raises his tone, which he drops again when he is not equal to what he is attempting ; just as a singer raises his voice when he not only recollects certain parts of a tune, but is certain of executing them. What the nestling is not thoroughly master of he hurries over, lowering his tone as if he did not wish to be heard, and could not yet satisfy himself."

The pairing season is the time of melody, and the voice of the birds varies from a warlike defiance of rivals to a tender cadence to win the heart of the beloved. The notes of birds can be heard at a great distance. The nightingale's voice can sometimes be distinguished at a distance of half a mile. The bell-like sounds emitted by the campanero can be heard three miles off. Mr. Waterton has described it:—"The campanero is about the size of a jay. His plumage is white as snow. On his forehead rises a spiral tube nearly three inches long, which has a communication with the palate, and when filled with air looks like a spire: when empty it become pendulous. His note is loud and clear like the sound of a bell, and may be heard at a distance of three miles. No sound or song from any of the inhabitants of the forest, not even of the clear Whip poor Will of the goat-sucker, causes such astonishment as that of the campanero. With many of the feathered race he pays the common tribute of a morning and an evening song, and continues it in mid-day also. You hear his toll, and then succeeds a pause for a minute —then another toll, and then a pause again—and then a toll and again a pause. Then he is silent for eight or ten minutes, and then another toll, and so on. Actæon would stop in midchase, Maria would defer her evening song, and Orpheus stop his lute to listen to him—so sweet, so novel, so romantic is the toll of the pretty snow-white campanero!"

The casual observer may not distinguish, but exact observers state that scarcely two birds of the same species have precisely the same notes, though there is a general resemblance. Kentish greenfinches and Surrey nightingales are esteemed the best. "Birds," says Barrington, "have a *patois* or provincial dialect. Some of them are successful ventriloquists, in the sense of being able to imitate the songs of others of the feathered tribes." If the birds mimic each other they are excelled by man in their imitative powers. Duret, whose book appeared in 1513, says that he had seen and heard a certain Sieur de la Volte, "who by a strange or rather marvellous industry counterfeited and imitated all the sounds, voice, language, noises, and disguisements of all animals and birds by the sole government and conduct of his tongue, mouth, and throat, which is one of the strangest and most admirable marvels that can be seen, told, or heard in this age."

Darwin has a suggestive observation on the fact of the higher apes not using their vocal organs for speech. He attributes it to the insufficient development of their intelligence, and adds the parallel case of many birds which possess organs fitted for singing, though they never sing. "Thus, the nightingale and the crow have vocal organs similarly constructed, these being used by the former for diversified song, and by the latter merely for croaking." He thinks further that the vocal organs were "primarily used and perfected in relation to the propagation of the species." Animals of widely different rank in the scale of nature have calls by which to attract their mate. Yet in the mammalia the evidence is so scanty as to have excited Darwin's notice. The *hylobates agilis* is said by Owen to be the only brute mammal that may be said to sing.

The distinction between the use of the voice by man and animal is one of degree and not of kind. Notwithstanding the enormous distance that separates the most intelligent of the brutes from the human species, we can see, in however rudimentary a form, the same qualities. That they have the power to connect and communicate information or ideas can hardly be denied. They have no language it may be said, and yet they have calls and songs by which they express the emotion of fear, of anger, of sexual love, and of parental affection. They can warn each other of danger, and express all the sentiments and passions that give variety and interest to their narrow lives.

WILLIAM E. A. AXON.

THE ROYAL OBSERVATORY AND ITS WORK.

In our volume of last year we presented to our readers a somewhat detailed account of the Meteorological Observatory at Kew—what it does for us in the way of weather wisdom, and how it does it, and how largely we are indebted to the Royal Society for the amount of valuable information which it gratuitously bestows upon us. We intend as far as is practicable to give a similar outline sketch of the work of the world-famed Observatory at the top of Greenwich Hill.

Passing through the gate, we enter the Great Transit-Circle Room. In the Report of Sir G. B. Airy, the late Astronomer-Royal, to the Board of Visitors, in June, 1847, it was stated that "meridional instruments carrying larger object-glasses were now required for the wants of the Royal Observatory." In an "Address to the individual members of the Board of Visitors to the Royal Observatory" a proposal for a large transit-circle was explained in detail; the Board held an extraordinary meeting in the spring of 1848 and formally approved of the proposal. That resolution was placed before the Lords Commissioners of the Admiralty, the official authorities over the Observatory, and they gave their sanction to the proposal, directing that it should be carried out. Messrs. Ransomes and May, engineers, of Ipswich, were instructed to prepare the heavy metallic parts, whilst the object-glass was entrusted to Mr. Simms. In the autumn of 1850 the instrument was mounted, and on the first observing-day of 1851 its regular duty commenced.

The telescopic part of the transit-circle is made in the following manner:—The tube consists of two hollow cones of cast-iron rivetted at their larger ends to a cubical centre-piece of the same metal. There is a horizontal axis, also of cast-iron, joined to corresponding sides of the central tube in a similar way; this axis is 6 feet long from pivot to pivot. The larger end of the tube holds the object-glass, which is about 8 inches in diameter, whilst the smaller end holds the eye-piece. The horizontal axis just mentioned terminates in pivots resting on "Y's," or shafting journals fixed upon piers, and supports the weight of the tube. The piers are of solid masonry, of adequate dimensions for the purpose, and rise from the foundations clear

of everything likely to cause tremor in the instrument. A good idea may be formed of the "look" of the telescope when on a level by supposing an artillery gun sustained upon its carriage by its trunnions, those trunnions representing the pivots of the horizontal axis; in fact, if the tube could be mounted upon something in the shape of a gun-carriage, the eye-piece covered over with tarpaulin, the object-glass removed, and then, if it could be placed in an embrasure near the Time-ball turret, it would be taken beyond all question by strangers for a gun of large dimensions. Inside each bearing journal of the pivots of the cross axis is a stirrup attached to a rod, chain, and counter-weight. The chains of these stirrups pass over a grooved wheel fixed to the tops of the stone piers, the whole of the arrangement performing a very necessary function. That function is to raise the transit-circle bodily out of its bearings for the purpose of oiling the pivots, and, still more important, to obtain a more distinct view of one collimator by the other, as nothing then intervenes between them.

Having got the transit-circle down again upon its "Y's" and into position, we shall speak of several of its other parts. The inner sides of the massive stone piers form a pit into which the observer descends by a short flight of wooden steps. Here too may be seen centred upon the axes-pivots of the telescope two wheels. That upon the left hand or eastern side is used for clamping the instrument in position, whilst that upon the right hand or western side is the astronomical-circle. This circle has handles projecting obliquely from the rim much like the steering-wheel of a ship. Formerly there was the telescope by itself and the circle by itself, each working independently of the other. The telescope had for its companion the sidereal clock—which will be again spoken of—and the combined work of the two was to determine to the nearest fraction of time when any heavenly object passed the meridian, but there were no means of accurately indicating the point at which such object was seen. The instrument for this purpose was one called the mural circle, taking its name from what it was attached to, namely, *murus*, a wall. That at Greenwich is 6 feet in diameter. It is, when in use, mounted upon an axis that passes through a stone pier, having suitable bearings upon both sides of the pier; this axis lies true east and west, so that the circle shall turn in the plane of the meridian. It has a telescope fixed to it that moves with it, and there is a graduated band of silver upon

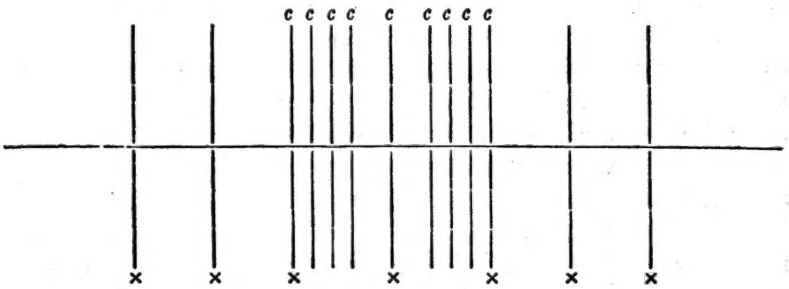
the edge or line of this astronomical wheel, and six reading microscopes at equal distances upon the pier close to the periphery of the circle scale. By these means the divisions of degrees, minutes, and seconds of space can be easily seen. The telescope is a diameter of the circle, and can be clamped to it in any position that may be desirable. There are several modes of observing with the mural circle, one being by the reflection of stars in a trough of mercury, which is placed conveniently for the purpose upon the floor near the stone pier already mentioned. It is the combination of this instrument with the great telescope that forms what is now known as the "Transit-Circle." The wheels are each 6 feet in diameter, the "real" one, as we have called it, having a circular silver band upon the western face finely divided into degrees, minutes, and seconds of distance, and another with coarser divisions upon the opposite face. To read this band there are ten reading microscopes, six of them being placed 60 degrees apart, which, as will be understood, command the 360 degrees of the circle. Each microscope is furnished with a micrometer, whilst the transit-micrometer carries the whole system of transit-wires. The micrometer heads are divided each into 100 parts. Other microscopes give the means of ascertaining the error of every 20 degrees of graduation, and of every 5 degrees. The eye-pieces of all these micrometer-microscopes are on the outside face of the right-hand stone pier, their line of sight being carried to the graduated band of the circle by small borings through the solid stone; the light is thrown upon the divisions of the band by a gas lamp on the inside face of the pier. There are two pointers in the pit by which to read the inside circular band. One of them is to indicate "North Polar Distance," and the other "Zenith Distance." There is a trough of quicksilver for the purpose of observing stars by reflection, the same stars being also observed directly, so as to give the zenith point, or the reading when the telescope points to the zenith. The zenith point is further determined by observing the coincidence of the horizontal or zenith distance wire, with its reflected image seen in the mercury when the telescope is pointed vertically downwards. A similar observation of the middle wire gives the error of level of the axis of the instruments with great accuracy. Some little explanation will be useful here to the non-astronomical reader.

Polar distance is the angular distance of an object from the

celestial pole, and is north or south according as it is measured from the North or from the South Pole. "North Polar Distance," mostly contracted to N.P.D., is used in the Northern Hemisphere. Declination is the angular distance from the celestial equator, either north or south. In other words, the polar distance and declination of an object are to the equator exactly what its altitude and zenith distance are to the horizon. Declination and right ascension represent the latitude and longitude of the heavens. The declination of a star measures its distance from the equator towards either pole, whilst its right ascension expresses the distance of the circle of declination upon which it is placed from a certain defined point upon the celestial equator. "Right Ascension" is mostly contracted to R.A., and is measured in one direction only; there is neither east nor west, for the astronomical circle upon which it is placed runs round the globe from left to right. The "Zenith" is the point that is immediately over the head of the observer; thus, if a plumb line was suspended from any projection, say the branch of a tree, or a beam from a wall, when it came to a state of rest the lower end would point towards the centre of the earth, or "Nadir," and the upper one to the zenith. They are both Arabic terms signifying the meanings here expressed. If we want to discover what part of the ocean a ship was on at a given time, or expects to be on, we obtain the latitude and longitude, and by their use we can see her place upon a good map or globe at once. If, on the other hand, we desire to look for a star or planet, we obtain the Declination (North or South) and Right Ascension, and by means of a good celestial globe we obtain the information as to the part of the heavens which we are to search for our object. We must not, however, confuse ourselves by thinking that celestial latitude and longitude mean the same thing as *our* latitude and longitude, for they do not. The latitude of an object in the heavens means its distance from the ecliptic or the plane of the great ellipse that forms the yearly path of the earth round the sun; in astronomy it is said to be the great circle in which the centre of the disc of the sun appears to move; it is so called because eclipses take place upon it. The distance must be measured in a direction perpendicular to the ecliptic. This refers to measurement of longitude. The longitude is the angular distance measured along the ecliptic between the first point of Aries and the circle which measures the latitude of the object. This "first point of Aries," or the sign of the Ram in the Zodiac,

in other words, the starting-point of all time-making and time-keeping, is that point where the ecliptic and equator cross, being the point at which the sun is at the Vernal Equinox, March 21.

The wires of the transit-circle telescope are attached to a suitable brass frame and fixed in the focus of the telescope. The original meaning of focus is a *fire;* but in optics it is a point in which any number of rays meet after being reflected or refracted. There is thus the focus of a mirror as well as of a lens. The wires in the focus of the transit-circle telescope are really not wires at all, but inch lengths of another material altogether. There are thirteen of them very ingeniously fixed in the frame already mentioned, at various distances from each other, much after this manner :—



The middle wire is the actual line of collimation, or the meridian.

This is a sketch of the appearance of the wires as they are seen in the focus of the telescope. Those marked × are at equal wide intervals for eye and ear transits, whilst those marked *c* are at closer intervals for chronographic transits, the intervals on each side of the middle wire being double the intervals between the adjoining wires in order to show that it is the centre of the transit. Were it not for these double-width intervals of the *c* × wire between the fours on each side, the observer might, when a star got upon it, possibly mistake the particular position of his observation, and think that it was upon any of the other wires of the group. The wire that cuts them all from left to right is the horizontal wire for zenith distances; in other words for what we who are not astronomical would call latitude, as has been already explained. As will be seen, there are thirteen vertical wires for transit purposes; the group of nine that are marked with *c* at the upper end are used, as stated, for recording observations by means of an

electric wire upon the chronograph. The four wires at the ends form in conjunction with the other wire a set of seven equal intervals for observation by eye and ear, in the event of a break-down of the chronograph; the nine small-interval wires being those by which the work is done. Every precaution must be taken at the Royal Observatory in order that the business shall go smoothly on; even if an elfin brigand balloon were to drop into the court-yard some midnight, whisk up the Astronomer-Royal and his chief assistant, and land them before the dawn to take observations at the foot of the Great Pyramid.

We will now give a few details of the adjustment and mode of taking observations that appertain to the transit-circle. Its position lies due north and south, its axis being in the plane of the meridian. By means of its counter-weight appliances it can be turned round the entire half-circle of the heavens, sweeping everything upon that meridian from the northern to the southern horizon. But although it has such extensive action, it must be borne in mind that it cannot move a single hair's breadth, as it were, either to the east or to the west. There is another instrument in the establishment to which we shall come in due time, that is "in charge of that department." The method of adjustment is by the use of the north and south collimators. The name of these instruments is said to be derived from the Latin *collimo*, to aim, to direct to a limit or end; and was probably applied to instruments of this kind from the direction and aiming functions, much with the same meaning that a common service telescope, when raised to the eye and *aimed* at an object, would be a collimator. The name, however, is very properly restricted in its application to the kind of telescope under notice.

A collimator, then, is a telescope furnished with a micrometer at its focus, in other words a wire-frame adjustable in the tube by means of milled-head screw action. There is a north collimator and a south one, and their wire-frames adjusted by means of their micrometers when the transit-circle is lifted clear of them, so that their lines of sight or internal axes shall be parallel. By pointing the transit-circle on the north and south collimator in succession, and taking the corresponding "readings" of its micrometer, the deviation of the line of sight of the transit-circle from exact perpendicularity to its axis of rotation is determined with the greatest accuracy.

These instruments are mounted upon strong piers of masonry,

built up from concrete foundations. Their object-glasses face the ends of the transit-telescope, being as nearly on a horizontal line with that instrument as scientific workmanship can accomplish. They are so constructed as to be easily moved aside when so required, and they fulfil every expectation to the letter. Their adjustment consists in their axes agreeing with each other, and with that of their great superior that rests between them. They have each a wire "diaphragm" dividing the "run" through the tube in a proportional scale to their purposes. The adjustment of the transit-telescope consists in the line of sight of that instrument being a prolongation of the same line through each collimator. That is, that the object-glass of the transit-instrument is turned upon the object-glass of the north collimator, and next upon that of the south collimator, and if the bisection of the middle wires by the horizontal wire in the trials are found to agree, the transit instrument is held to be correct so far as the collimators are concerned. It must then be seen whether the line of collimation, or line of sight, is due north and south.

From this it will be seen that every point in the celestial meridian will come across the line of sight of the instrument, including the north, the zenith, or overhead, and round to the south. The sun, as well as the stars, is observed when it is upon the meridian, and the times of the passage of the first and second edge of the disc, or "limb," as it is called in astronomy, are carefully noted. This passage indicates apparent solar noon. Those of our readers who enjoy the luxury of celestial and terrestrial globes may demonstrate with much pleasure many of the simpler astronomical problems for themselves. When the moon is on the meridian it is observed with the transit-instrument, but as the opportunities are too few, and too uncertain, there is another instrument, called the Altazimuth, which will be again mentioned in the course of this paper, assists it in that duty.

We have to consider the peculiarity that presents itself to our vision with respect to the distant heavenly bodies. The sun, moon, and planets have all appreciable discs which are wondrously enlarged by the telescope. As regards the fixed stars, however high the magnifying powers of the telescope may be, they appear no larger whatever, their distance is so immense that they only look brighter and clearer, but the same *size* as they do to the naked eye; some allusion will be made to their distance further on. From these are selected the "clock stars" with which

observatories have to deal. The "first point of Aries," or that where the ecliptic and equator cross, has been previously noticed. Now, if the hands of a sidereal clock are set for zero when this first point is on the meridian, and the clock does not vary in time, its hands will indicate exactly the rate of the diurnal motion of the heavens. Every degree of the equator will mark four minutes of time, and every 15 degrees will mark one hour, and so on in proportion with the twenty-four hours to the 360 degrees of the great circle. And this action of the sidereal clock establishes the further fact that the pendulum beating seconds of time in its computed latitude, by the force of gravity, is the only real measurer of the passage of time; "escapements," wheel-work and all must be made to agree with the pendulum's beat, or swing. An astronomical clock will beat 86,400 seconds in twenty-four hours when going to its utmost exactitude. But, as no mechanism is absolutely perfect, it may beat either a second under or a second over these numbers, and it is the variations which the astronomer has to correct and allow for.

The two massive stone piers that support the transit-instrument enclose upon their insides a space that, being below the level of the room floor, forms a pit. Into this pit the observer descends, and by means of the steering-handles on the great circle—previously spoken of—he sets the telescope for the object that he is about to observe. If it is the sun, moon, or a plane—each of which has a visible disc—the centre of such disc upon the central wire is the actual transit, but a mean of the times of the entire passage is taken, as it is with the stars. With the chronograph the operation is much simplified, and much more correct. As the star, for instance, passes each wire, the observer instantly presses the chronograph key near the eye-piece, and the point of the latter instrument records the time to the smallest fraction of a second.

The chronograph is an odd-looking instrument when seen for the first time. There is a clock-train, with a conical pendulum driving a large cylinder revolving horizontally. This conical pendulum is fixed at the upper end to a universal joint, whilst the lower is attached to a projecting stem terminating in a blade revolving in a trough of glycerine, which has been found to be the most suitable fluid for the purpose, as it does not produce rust. A frame moving upon endless screws, which are turned slowly by the clock, carries the recording mechanism. This

"mechanism" consists of two electro-magnets, each of which can attract an armature, and produce action in two steel points. The cylinder is covered with paper, the object of which will be seen presently. Wires from the transit-clock connect it with one of the electro-magnets just named, the consequence of which is that, at every beat of the pendulum, galvanic motion takes place, and one of the points makes a puncture on the paper immediately under it. From the other of the electro-magnets separate wires pass to the transit-circle, the altazimuth, and the great equatorial instruments.

Now, we will suppose that the observer is at work with the transit-circle, and as his object passes each wire of it he taps the contact-button, when the second steel point, being in order with his wire, makes a puncture upon the cylinder-paper. The chronograph-cylinder is of brass, 20 inches long, and 12 inches in diameter. Observations can be punctured from four different instruments, but with this chance, that two or more observers may press their contact-buttons at the same instant, which would produce only one puncture; but that is just within the possible, and very improbable. The chronograph runs for six hours, revolving once every two minutes. An assistant marks the time corresponding to the transit-clock punctures every morning, with the names of the objects that have been observed during the preceding day and night. These particulars are then entered into the transit-book, and that is handed over to a computer for systematic reduction, after which they are laid up for future reference in the Observatory library. We must not omit to mention that at the south end of the transit-circle pit there is a clock that is used for eye and ear observations of slow-moving stars within five degrees of the pole. There is also an electric wire attached to this clock that is in connection with the chronograph, and is used in that way when the sidereal clock is under repair.

In taking observations by the eye and ear the method is somewhat different. Here the transit-clock must be the speaking companion to the transit-instrument. The observer in this way has to watch the passage of the star across the wires of the telescope, and count the beats of the clock at the same time. Although this seems difficult to some of us who can hardly comprehend it from an Observatory point of view, yet practice in the work enables the astronomer to estimate with great

exactitude the fraction of the second that the transit of the star may give upon the beat of the clock-pendulum. We have often alluded to the *wires* of the telescopes that have been named. We said some time ago that the wires in the focus of the transit-telescope are really not wires at all, but several inch-lengths of another material altogether. They are, in fact, the production of a tough-spinning spider; so that the practical existence of the meridian of Greenwich, which some people so often glibly talk about, is neither more nor less than about an inch of vertically-fixed spider's web!

As the chief object of the transit-circle is the marking, or rather furnishing, the *data* for the marking of time, let us see how that is effected.

The principal mechanical agent in the subsequent operation is the sidereal clock. The Observatory one is in an underground room called "the magnetic basement," where it stands with its back against a wall; there it goes through its allotted duty of "ticking" its seconds to "weather-prophet" companions, upon whom it may look with a certain sympathy. It feels itself above them and beyond them, claiming a dignified and lofty kindred with the transit-circle upon earth, and the distant clock stars—distant beyond the grasp of the human mind—in their several lodgements in the measureless firmament of heaven. The Royal Observatory prints a table with this title: "Assumed mean Right Ascension of Clock Stars and Circumpolar Stars, with the Corrections to the R.A. of the Nautical Almanac." There are about 200 of them altogether, but transits for time are taken only from those on the southern side of the pole.

The sidereal day, like other days, is divided into 24 hours. A star passing the meridian of the celestial sphere—another expression for its transit—it will pass at the same hour on all following days indefinitely; the astronomer need, therefore, only look at the *sidereal clock*, when he will know what stars are about to come to the meridian, and what he need make ready for. It may be noted that the sidereal day begins with the instant at which the first point of Aries passes the meridian. But it does not run with our hours at all; it only runs with the course of the stars, and as they occupy the same number of seconds every day from transit to transit the clock records them. To be a little more exact, sidereal time began its day 2 minutes 22 seconds after mean noon on the 21st of March,

1884, and it ran on from day to day gaining and gaining until the 21st of June, when the clock marked 21 seconds past 6 at mean noon. Upon the 20th of September, again, this clock had gained 12 hours all but 53 seconds on mean time at noon. The gain is 3 minutes 56 seconds a day, which is known to be due to the motion of the earth. It must be understood that the hours of the sidereal clock would be of little or no use to us, as such hours merely indicate the passage of certain stars across the meridian. To deduce mean time from them requires a complicated calculation.

The sidereal clock has hour, minute, and seconds hands, each hand revolving in a figure-circle of its own. Like all astronomical clocks, it has only one XII, the figures being marked from I to XXIII, the 24th being a 0. The mean time of the astronomer is different from civil time, in this wise: the astronomical day always begins at noon *after* our midnight, and runs on to the next noon. There is neither A.M. nor P.M., but 24 hours, such hours being those of mean time. But how does he obtain them, it may be asked. It has been explained that the *sidereal day* is the interval between successive transits of a star across the meridian; the solar day, on the other hand, is the interval between the passages of the sun across the meridian; it is also shown upon a sun-dial set for the latitude of the place. The solar day is longer than the sidereal day. It is divided into 24 hours, and its hours, minutes, and seconds are longer than the hours, minutes, and seconds of the day that is regulated by the stars. This seems rather puzzling at first sight; that two heavenly bodies, such as a star and the sun, both passing across the transit-telescope in the meridian should have different lengths in their hours, minutes, and seconds. Let us hear what the astronomer says about it.

The hour-circle of a star and the hour-circle of the sun arrive to-day, we will suppose, on the meridian at the same second of time. To-morrow, when the sidereal day has made a complete revolution, the hour-circle of the sun is in a more eastern position; on the following day the angle included between the two hour-circles is still further increased. These irregularities accumulate until the two circles become in position at right angles to each other. It will now be seen, by means of a globe, that if the hour-circle of the star passes through the zero point of the equator, that of the sun will fall upon the 90th degree. The star that passed the meridian at the same

instant as the sun will pass it now a quarter of a day before him, and that will go on in a given ratio until both star and sun coincide again; but in the interval the star will have passed the meridian, in other words, made one day more than the sun. There are three causes which combine to render the solar day so unequal that the sun can never be a good time-keeper for us. These causes are: the inequality of the daily motion of the sun, the difference in the direction of the motion, and the irregular angular distances from the equator at which the motion is effected.

From these irregularities the Greenwich Observatory has to deduce regularity. A fictitious sun is brought into action that moves in the plane of the equator with a regular motion, setting out on the imaginary journey at times with the real sun. Tables are computed for him, and by looking any day at those tables we can ascertain how much the real sun is *wrong*, whilst the fictitious one, which is so carefully looked after at the Royal Observatory, is right; and this brings us to the "standard mean time clock." It is pretty clearly understood that civil time or the time of everyday life differs considerably from both the time of the stars and the time of the sun; what they do at Greenwich, therefore, is to see that we obtain correctly the time of that sun which the astronomers have made for us. That time begins upon the instant *after* 12 at midnight, and ends *at* 12 on the following midnight. Unlike the sidereal clock it has a noon and a midnight, and unlike the clock of astronomy it has a midnight, which the latter has not, only noon. To show how the fictitious and the real clocks run on their courses, we will give several of their approximations and greatest distances. For instance, on the 11th of February, 1884, the mean time sun, or our clock, was 14 minutes 28 seconds before the real sun, whilst on the 14th of April it was only 7 seconds in advance. Then the real sun began to get ahead, and so continued until the 1st of November, when it was 16 minutes and 19 seconds in advance. On the 24th of December, Christmas Eve, another change set in, and the clock was again 7 seconds in advance of the sun; and so these changes go on from year to year, and we change and go on with them, and have changed, and have gone on.

The difference between the two suns, or rather between the mean time clock and the real sun, is provided for by an "equation of time" table, which is what is meant by "clock before the sun," and "clock after the sun." This table is for

every day in the year, and the examples which have been given can be found in their monthly columns in the "British Almanac."

This will be the proper place to say a few words about the two great clocks of the Royal Observatory, namely, the sidereal and the mean time standard ones. They are both wonders of horological mechanism, and they have so many accessories of one kind and another that looking at them it is only the dials and the beats of the pendulum that convince you of their being clocks at all. In addition to the complex telegraphic provisions there are arrangements of magnets and barometric mercurial columns in order to ensure, as far as is possible, absolute equality in the beats of the pendulums. The mean time standard is in electric sympathy with a number of clocks throughout the buildings, and it is the one that sends signals, drops time-balls, fires guns, &c., all over the country every day at 1 P.M. It is, in fact, the ruling timekeeper of our existence. Its domicile is in a stone closet under the time-ball turret, and it has for companions a clock by Graham, and another by Dent. A large window throws a good light upon its little dwelling. Its outdoor friend is the well-known "clock" in the Observatory wall by the entrance gate, about which many comical anecdotes have been told. This "clock" is, in reality, no clock at all; it consists of a bar magnet fixed horizontally upon a pin passing through its centre. The tick, tick, which we hear upon the outside is made by this bar as each end of it rises and falls by the electric action of the wire from the pendulum of the standard clock; as that clock beats so does its friend in the wall at the same instant. It has a 2-foot astronomical dial, the hours being numbered from I to 0 for the 24, the XII being at the bottom where the VI is of the ordinary clock. The comical side of this dial consists in the mistake that people make in setting their watches by it, through the hour and minute figures being in unusual positions. Hundreds of people have taken it for the mean time clock of the Observatory, little thinking that there are no "works" in the usual sense belonging to it; but it is much more correct than any one with "works," for its tick is, in fact, a prolongation of that of the mean time clock pendulum itself.

The Westminster clock is on the most fraternal terms with the standard one, for during the year 1883, the latest annual report at this present writing, that clock up in its high tower had kept excellent time. Its error from Greenwich mean time was under 1 second on 66 per cent. of the days of observation,

between 1 second and 2 seconds on 25 per cent., between 2 seconds and 3 seconds on 6 per cent., and between 3 seconds and 4 seconds on 3 per cent. of those days. The error has never exceeded 4 seconds. A gentleman comparing his watch with it from Westminster-bridge exclaimed :—"Good ! Ah, they know how to keep time up there." And so they do. Let us here correct a very widespread error to this effect—a large number of persons are under the impression that this clock is electrically controlled, so to speak, by the mean time clock at Greenwich, being set right every morning. That, however, is not so, but there is an arrangement by which it reports itself every day by wire, and a return message is sent from the Observatory to the clock attendant by which he is enabled to know the exact state of going, or if there is any error. The *first* blow of the hour upon the hour bell is *the time;* it does not as a rule vary a second, and may always be relied upon to 2 seconds of true time. That certainly is wonderful timekeeping for a clock in such a position, having four dials of 22 feet 6 inches in diameter, with four sets of hands, the minute ones being 14 feet long with hour hands to correspond in size, at a height of about 300 feet. Being outside they are, of course, exposed to the weather. We have heard that it has never been stopped by the weather but once, and that was during a heavy snowstorm, when the weight of snow that had accumulated on all the sets of hands brought the clock to a standstill. The pendulum is a 2-seconds one, 13 feet and half an inch in length, and weighs altogether about 700 lbs.

In November, 1875, the Journal of the British Horological Institute issued a time map for the Westminster clock hour-bell to enable persons living within sound distance to compare their clocks. This map is in circles of 2-second spaces, extending to half a minute, assuming the bell to be heard so far. These seconds circles inclose an area having a radius from the clock tower of between 7 and 8 miles. The velocity of sound is taken for the purpose at 1,110 feet per second, with certain small corrections for temperature which are given in the number of the journal containing the map. It is an exceedingly useful companion to the private sitting-room of a suburban resident.

To return to Greenwich. Our next inquiry is to ascertain how the mean time clock sends out its signals all over the land. Every morning the Time Department of the Observatory is busy in correcting clock errors, small as they always are; in fact, so small that none but astronomers would be able to detect

that there were any errors at all. When all has been corrected the pendulum of the normal clock performs its important functions, and by a system of electrical "relays" Greenwich time is instantly told to almost every village in the country. It travels east, west, north, and south, as the saying is, from the Land's End to John o' Groats. Now that the post office is the master of it commercially, it goes wider and further than it ever went before. But it must not be supposed that these morning 10 o'clock signals are the only ones. They are sent off as the normal clock completes every hour in the twenty-four; what is done in the morning is to ascertain and correct, as just stated, any clock error that may be found.

The arrangements of wires and magnets, and all the auxiliaries for the purposes of *making* time in the Observatory are apparently complicated and undoubtedly most ingenious. The method of bringing the standard clock to mean time is interesting. One pole of a permanent bar-magnet about 6 inches long is carried by a pendulum rod 2 inches in front of it with the north pole downwards, and at each vibration passes closely over a fixed galvanic coil. This coil is in circuit with a battery, and is not in action in its ordinary state. On the Time Superintendent's desk is a small clock to direct him in dealing with the rate. The battery power is such that a current working for 10 minutes on the bar of the clock pendulum will alter the time 1 second. Thus an error of a very minute fraction of even a second can be corrected upon this clock. Above the south pole of the magnetic bar on the mean time pendulum is a small bundle of soft iron wires bracketed to the case of the clock with sliding action; it has an alternate motion to or from the pole which alters the going rate of the clock without as much as touching the pendulum. The sidereal clock, too, drives what is called the sidereal relay. This relay registers the clock seconds on the chronograph, controls the half seconds of a pendulum clock near the hour circle of the great equatorial driving the 59-seconds clock, and working a sounder to render distinctly audible all over the dome the beats of the standard sidereal clock itself.

Let us now ascend and examine the Great Equatorial. Upon entering the room where this massive telescope is, the first view will be sure to arrest the surprised attention of the stranger. This instrument looks like a ponderous steam-engine in a state of rest, and it has so many subsidiary parts that it would require

a lengthy paper to itself. The room is a circular one of about 30 feet in diameter, and almost the same height, the roof being a flat one, or nearly so. The instrument was constructed and erected from the designs of Sir G. B. Airy, the late Astronomer-Royal. The ironwork is by Messrs. Ransomes and Co., of Ipswich; Troughton and Simms, of London, having made and attached the observing mechanism. The large object-glass is nearly 13 inches aperture, the focal length of the instrument being 17 feet 10 inches. The glass was made by the celebrated firm of Merz and Sons, of Munich, and is a very fine one. The polar axis is formed of massive iron tubing, diagonally braced, and presents the appearance of great strength and solidity; at the floor end of the axis is a 24-hour wheel, 6 feet in diameter, having reading microscopes with micrometer-screws and other auxiliaries; the instrument is driven by a beautifully constructed water-clock, supplied from a tank overhead. When the clock is in motion it runs so smoothly that it can scarcely be heard. The driving-clock mechanism is regulated by a modification of Siemens' chronometric governor and a conical pendulum. The observation-opening is through a shutter-window, and when the clock mechanism has set the telescope in motion, the observer can keep his seat moving on the floor-circle by means of a winch-handle and wheel-work; the "dome" is turned in unison by another winch-handle whose wheel-teeth take into a large tooth-circle fixed to the wall of the dome. By the arrangement of the mechanism, the telescope and the observer can follow the motion of a heavenly body over the entire firmament. The equatorial may be said to be the sentinel of the sky, as it is continuously on the watch for whatever can be seen, comets, stars, planets, and so forth. It can be elevated or depressed, moved east and west, in fact in any direction that the observer may desire. Furthermore, when he finds anything worthy of note, such as spots upon the sun, the rings of Saturn, and the belts of Jupiter, he has only to touch his contact-key, and the pricker belonging to him at the chronograph will register the minute and second of his observation. For general purposes the equatorial is the most powerful instrument that can be constructed for an Observatory.

The great equatorial has for some time past been engaged more in spectroscopic investigations than anything else. We need not here go into any explanation of what a spectroscope is, but merely say that it is an instrument in which the nature of

light is studied under the action of a prism or prisms. Spectrum analysis has now become a power in the hands of the chemist and the astronomer, the latter using it for determining from the decomposition of the light of the heavenly bodies what that light is produced by. It is known by practical tests that different gases, liquids, and solids, will yield different kinds of flame under combustion. When, therefore, light flames from the sun, moon, stars, or other luminaries are found by the spectroscope to agree in character with those that are known, the logical inference is, that the same substances are in a state of combustion in whatever body sends its rays through the glass prisms of that instrument.

With respect to the stars the spectroscope has added an unlooked-for item of knowledge. It can tell us of near or distant stars, whether they are approaching or receding from us. In the "Companion to the Almanac for 1878," there is a very interesting paper on "The Application of the Spectroscope to Astronomy," by Mr. E. W. Maunder, the gentleman who is now using the great equatorial for that purpose at the Royal Observatory.

The next instrument on our way is the Altazimuth. It is mounted in the highest practicable part of the building, so as to have an unobstructed horizon all round. There is a brick pier built up from the foundation level, which is surmounted by a short stone pillar, and upon this pillar the instrument stands. At first sight it suggests the cylinder of a nautical engine with the piston-rod removed. The azimuth circle is 3 feet in diameter, and the instrument is made from hard gun-metal; it weighs nearly 4 cwt. It has also a vertical circle of the same size, and all requisite contrivances. The purpose of the alt-azimuth is to take observations of the moon daily from month to month in every part of her orbit, so as to improve the lunar theory. The mural circle and the transit telescope had been previously used; but from the frequency of cloudy weather such observations could not always be made. By means of this instrument, however, observations can be regularly taken when the moon is off the meridian, and her meridional place computed to exactitude. All persons who are engaged in navigation are fully cognisant of the value of being acquainted with the method of "taking lunars" for longitude and distances. Descending from this room we visit the photoheliograph, an instrument for obtaining pictures of the sun. The images are taken upon plates,

the primary focus being only half-an-inch, whilst the subsequent enlargements upon the glass are 8 inches, or sixteen times the focal size.

One of the most interesting places is the chronometer-room, in which chronometers are kept for the Royal Navy, and where others are upon trial. The chronometers number between 150 and 160 in all, 40 of them belonging to makers who send them on the annual trial. A word or two of explanation may be given here in respect to the "Greenwich trials."

The Astronomer-Royal announces every autumn to "the trade," the latest day for receiving chronometers in the Observatory. Those makers who are known and recognised have no trouble; but a "new hand" will have to give references as to *bonâ fide* respectability, &c. The instruments have to be delivered by the owner not later than the day named, when they are placed in the chronometer-room under the special charge of an assistant. They are regularly wound up, and their rates are taken from day to day, but they are otherwise not meddled with. Should one break down the owner is written to, and he removes it, but cannot re-enter it until the following year. The trials begin about the second week in January, and end in August, lasting about twenty-eight weeks. The makers then receive notice to take their chronometer away, and a tabulated report of the rate of such instrument is subsequently supplied to the trade by the Astronomer-Royal. No charge of any kind in any way is made for this supervision.

And here is a point that cannot be too widely made known to the public. *No watchmaker, however eminent his position, can have his watches rated at the Royal Observatory upon any conditions whatever.* The chronometer trials are deemed to be for the benefit of the Royal and mercantile naval services, and hence for that of the public; thus accounting for their being tried by the Astronomical Department at the Government expense. What, then, must be the depth of the knavery of watch-dealers who hang up selling tickets in the window, having on them these words:—"This watch has been rated at the Greenwich Observatory to the tenth of a second"? The Observatory at Kew has opened a rating department under the superintendent, where watches can be sent by makers and wearers, and certificates of going obtained at a very small cost.

There are many curious old instruments at Greenwich for the particulars of which we have now no space. There is the large—

very large—silver case chronometer made by John Harrison in 1767, by which he won the reward of 20,000*l.* for finding the longitude by it. He took it to Jamaica and back, and was much nearer than the stipulation of the Board of Longitude, which was fixed at 30 miles.

There are other astronomical instruments in the Observatory than those of which we have spoken. The Misses Lassell have made a present of their father's two-feet reflecting equatorial, so well known at Maidenhead, where Mr. Lassell resided. We saw it in its new home, a fine circular building in the south ground. There are, in addition, the Sheepshanks, the Shuckburgh, and the Simms equatorial. The last-named is mounted on the open ground, being covered by a tarpaulin, and is the only one that is so placed.

In addition to all that has been here so imperfectly touched upon, it must be added that there is a thoroughly equipped meteorological department in the Royal Observatory under the experienced supervision of Mr. Ellis. As, however, we gave a pretty full account of the same kind of work in our paper upon the entirely Meteorological Observatory of Kew in the volume of 1884, to go into particulars of what is done every day at the Royal Observatory, Greenwich, would of necessity be a repetition of the same instruments and details. For that reason only we must on the present occasion be content with the mere mention of the fact.

We wish here to point out that this paper has been written expressly for popular reading; astronomical technicalities, such as could only be systematically arranged by the experience of the trained astronomer, have been, as far as practicable, omitted. Had the article been intended for astronomers only it would have been written by an astronomer. Whatever shortcomings, therefore, may be in it, we are alone responsible for, our main object having been to speak in a plain conversational way upon some developments of the highest scientific operations and instruments connected with the wonders of the heavens. Such being the leading motive that guided us we most earnestly pray the generous indulgence of our readers throughout.

In concluding our labour we have to tender our sincere thanks to the Astronomer-Royal for his kindness and assistance, as well as to those gentlemen in the establishment who forwarded our endeavours in every way within their power.

CHARLES STUART MURRAY.

PART II.

ARCHITECTURE AND PUBLIC IMPROVEMENTS, ART EXHIBITIONS, SCIENCE, MUSIC, PHILANTHROPY, LEGISLATION, STATISTICS, CHRONICLE AND NECROLOGY OF 1883-84.

ARCHITECTURE, &c., 1883-84.

FEW of the buildings erected in Great Britain during the past year are of exceptional importance, but the general aspect of our cities is being rapidly changed in a very marked manner, as alluded to in the "Companion" of last year. Streets which, a few years since, presented nothing more pretentious than fronts of the ordinary dull brick or cement, set off with a few dressings to the windows, a cornice, and perhaps a balustrade, now furnish examples which at once arrest attention, of light red brick fronts, bold dormers, and lofty gables, designed with details of all kinds of styles, from the Perpendicular to the Renaissance, and, in a large number of cases, appearing to have derived their inspiration rather from the Low Countries or the borders of the Loire than from any English type.

However inspired, there can be no doubt that the freedom obtained by such picturesque outlines and colouring as the above have resulted in many designs of great merit and individuality. But, although this is the case when the work is in strong hands, there is much reason to fear that it will not be so when in weak hands, unrestrained by the use of any special details.

The changes are similar both in London and the provinces. Take Leicester, for example, a good type of a Midland county town, whose great square, ugly warehouses, and long lines of two-storied cottages, were fearfully monotonous. But now the high-gabled new buildings in and near the Market Place, Town Hall, &c., give a life and interest to the general aspect of the town, which to those who have not visited it for some years past affords a pleasing surprise.

To accelerate the change, the speculating builder (always keen to note the direction of the public taste) has stepped in, and it may be fairly said that, by availing himself of the aid of skilful architects, he has, in many cases, produced very successful results, although the high-pitched gables, and the red brick and stone,

or terra cotta, or coloured concrete of the new work, as contrasted with the horizontal lines and the cemented fronts of the old hard by, are often somewhat startling.

But other builders are content to rely either on their own skill or their powers of copying, and the wretched details which too often now spoil a design, otherwise good, are likely to be still more debased and more extravagantly varied when the work gets into inferior hands. In fact we have, even in the drawings in the Royal Academy exhibition, very strong examples of this, showing broken pediments, studiously ugly dormers, strips of thin pilasters without bases, and Italian details of the most emasculated type. And even when the design for a front is good, its effect is completely spoilt when it is repeated house after house, in one long row.

For the present these newly-adopted styles have scarcely been successfully used in edifices of large size. One of those, viz., the Leicester Municipal Buildings, already described, although possessing much merit in its several parts, does not present the bold general outlines and imposing mass which one associates with the architecture of the public hall of an important town.

From the accounts hereafter given in detail, it will be seen that the designs for municipal and other large civil public buildings have been chiefly in the style which may be termed Classic, or Italian, or Renaissance, according to the severity or the freedom used in its outlines and details: but it must be noted that the term "Renaissance," as now used by architects, and chiefly quoted from their descriptions in the subjoined accounts, seems, often, to have a very different meaning to that which it formerly had, and that employed by Mr. Fergusson, viz., the style used by Inigo Jones at Whitehall. The long horizontal sky-line, little broken except by an extra storey or a tower, is now varied by high roofs, lofty dormers, and massive chimneys, the balustrade (Mr. Ruskin's abomination) being well-nigh a thing of the past. In ecclesiastical edifices the architects chiefly adhere to the Pointed styles.

Such, also, is the case with many of the collegiate and other scholastic buildings; but in others this has given place to the use of such mixtures of styles as is seen in *e.g.*, Inigo Jones' beautiful garden front of St. John's College, Oxford, rather than of the Perpendicular work of William of Wykeham hard by.

It may be noted in connection with the styles of the sixteenth and seventeenth centuries, that a good notice of them was given

in a paper by Mr. E. J. Tarver, on the influence of foreign architects in England. The same subject was also well treated at the R.I.B.A. Conference, in May last, by Messrs. Aitcheson, A.R.A., and the Rt. Hon. A. J. B. Beresford-Hope, M.P., Professor Kerr, &c., and in a very useful pamphlet written by Mr. Wyatt, "On the Architects of the Renaissance." The drawings of John Thorpe, a noted architect in connection with the introduction of Italian architecture in England, were described in a lecture by Mr. Gutch, who, however, omitted to mention that these drawings are readily accessible at the Soane Museum. The buildings of note which have been finished or commenced since our last report, in London and the provinces, may be classified under the several heads of Municipal Buildings, Clubs, Hotels, Hospitals, &c.

Municipal.—Numerous cities, following the example of Birmingham, Manchester, Plymouth, &c., have engaged in the erection of town halls, most of which are not only likely to be great ornaments to the cities, but to be the cause of large improvements being made in their several localities. At Leamington, the new Town Hall has just been completed in the Renaissance style, in red brick and stone, from the designs of Mr. Cundall. It has a frontage of 150 feet, with a height of 60 to 70 feet, and a tower at the south-east angle 130 feet high. At Nottingham, the erection of the municipal buildings, designed by Messrs. Verity and Hunt, and described in the last year's "Companion," has been stopped, owing to a difficulty as to their proposed site, and it has been determined to erect the magistrates', police, and fire brigade departments only for the present, the style (Renaissance) and architects being as in the original design. The cost will be about 60,000*l.* At Birmingham, the new art gallery and museum adjoining the Council House are far advanced, and will complete this fine building, a detailed notice of which is delayed until the whole mass is finished. A somewhat similar remark will apply to the new school of art and other buildings in progress. At Leeds, the municipal offices, a very clever work in the Renaissance style, with a frontage of 170 feet, sumptuously furnished, and fitted up from the design of the architect, Mr. Corson, were opened at Easter. At Hyde, near Manchester, a new Town Hall, in the Queen Anne style, is being erected from the designs of Mr. Beaumont. At Birkenhead, the Town Hall, an important work in the Italian style, by Mr. Ellison, is in course of erection.

At Widnes, the design for the Town Hall in the Renaissance style, by Messrs. Holme, was selected in competition, and is about to be carried into effect (the materials being brick and terra cotta) at a cost of about 15,000*l*. A competition for a similar building at Burnley, for which thirty-two sets of plans were sent in, has recently been decided by Mr. Waterhouse in favour of Mr. Holtom, of Dewsbury. The grand municipal buildings at Glasgow, designed by Mr. Young, have been built to a height of 10 feet above ground, though stopped for a time by a strike of the masons. The cost will approach 240,000*l*. The fine municipal buildings at Bradford are about to be enlarged at a cost of about 30,000*l*., by Messrs. Mawson. In the City of London, a very praiseworthy addition to the Guildhall has been made by the new Council Chamber, a dodecagon, 54 feet internal diameter, late Perpendicular in style, and very satisfactory in its general design, details, and elaborate decoration. Its author is the City Architect, Mr. Horace Jones, to whom the Corporation is indebted for the designs of many of its recent buildings, *e.g.*, the open-timbered roof of the Guildhall, the Library and Museum there, and the great markets at Smithfield and Leadenhall Streets. One of the chief amongst new public buidings of another class in London is the large addition to the Stock Exchange, of which there is completed the frontage towards Throgmorton Street, by Mr. Cole, bold and well designed, two storeys in height, thoroughly Italian, both in general design and details. The building at South Kensington for the City and Guilds Technical Institute, by Mr. Waterhouse, A.R.A., described in the last year's "Companion," has been opened. A new Hall for the Butchers' Company has been begun in St. Bartholomew's Close, from the designs of Mr. Peebles. The open quadrangle of the Royal Exchange is being roofed over, in accordance with a plan by Mr. C. Barry, selected in a limited competition. Objection has been taken to the removal of Sir W. Tite's ornamental parapet; but it must be remembered that this was erected after Sir William had vainly endeavoured to induce the authorities to have the area covered.

Club Houses.—This class of edifices, whose erection seemed at one time almost to have come to an end, is now about to take a very prominent place in our large cities, recent events having brought political associations of this kind very strongly to the front. In London, the National Liberal Club, to be erected in Portland stone, from a design by Mr. Waterhouse, A.R.A., in the

late Renaissance style, will occupy a very conspicuous position on the Victoria Embankment, having a frontage of 140 feet to Whitehall Place, with a general height of 100 feet, and a circular staircase tower 170 feet high. One feature in the design will be an arcade on the principal floor, and a loggia over. There will be three storeys of chambers for the use of the members.

The Constitutional (Conservative) Club, now being erected in red and buff terra cotta relieved with faience, from the designs of Mr. R. W. Edis, in the German Renaissance style, will present a frontage of 200 feet, with three lofty gables, to Northumberland Avenue. The rooms will be grouped round a large octagonal central hall. The club will have 80 to 100 bed-rooms for members, and accommodation otherwise for 6,000 members.

Another club, the Badminton, in Piccadilly, also from Mr. Edis's design, is being erected in Portland stone, in the Elizabethan style. Stable accommodation is being provided for the use of the members, this being a special feature of the club.

A large addition is about to be made, under Mr. MacVicar Anderson, to the Junior Carlton Club, in Pall Mall.

At Bristol, a Conservative Club is being erected in Baldwin Street (to which it will have a frontage of nearly 60 feet), from the designs, in the Italian style, of Mr. Lysaght.

At Birmingham, a Liberal Club has been erected from a good design, in geometrical Gothic, by Mr. Cossins, the materials being red brick and terra cotta. In the same town a Conservative Club is to be erected, at a cost of 12,000*l.*, the designs of Mr. Plevins, in the French Renaissance style, having been chosen in a limited competition.

At Sheffield, the Gladstone Buildings for the Reform Club are designed by Messrs. Hemsoll and Smith, in a style which may, perhaps, best be characterised as a very free Gothic.

At Liverpool, a Conservative Club, with nearly 100 feet frontage, has been erected, in the Italian Renaissance style, from the designs of Messrs. F. and G. Holme, and a Junior Club (Gothic), in red stone, has also been built.

At Manchester, the Diocesan Chambers, or Club Buildings, in King Street, domestic Gothic in style, built of red brick and stone, are completed, from the designs of Messrs. Horton and Bridgford.

At Edinburgh, a Conservative Club has recently been completed by Mr. R. R. Anderson.

Hotels.—This important class of buildings continues to assume

large proportions, owing more probably to the increased facilities for travelling, and increased accommodation hence required, than from any great alteration in our social life.

In London, we have the First Avenue Hotel, in Holborn, recently opened, and the Métropôle, in Northumberland Avenue, too unfinished at present to allow of its general effect being fairly estimated, but promising to give a bold and effective sky-line, and to present a decided improvement on the first-named both in general outline and details. Both hotels are by the same architects, Messrs. F. and H. Francis, and are built of stone, in a free Italian style.

Quite different in style and materials is the Arundel Hotel, on the Thames Embankment, a good composition (Perpendicular), in red brick and stone dressings, by Mr. Dunn, and also Hatchett's, in Piccadilly, in red brick and Jacobean.

The Holborn Restaurant is a very meritorious work, by Messrs. Archer and Green, in the Italian style; in the internal decoration Mr. Armstead, R.A., has supplied two Caryatid figures of exceptional merit.

In Princes Street, Haymarket, is a bold Italian composition, embracing an Hotel and Theatre, carefully studied both in general design and details, by Mr. Phipps.

Hospitals.—During the past year some good work has been done with these, although none of exceptional magnitude have been built.

Large additions have been made, under Mr. Salter, at a cost of about 25,000*l.*, to St. Mary's, Paddington, and to the London Fever Hospital by Mr. Young. A circular ward, &c., has been erected, at a cost of 10,000*l.*, at Hampstead, by Mr. C. Bell, and a smaller one (the circular ward being 35 feet in diameter) at Greenwich, under Messrs. Young and Hall, so that this circular plan is likely to have a fair trial. The Training Hospital, now being erected in red brick and stone at Tottenham, at a cost of 20,000*l.*, from Mr. E. C. Robins' design, deserves especial notice. It is for the Evangelical Protestant Deaconesses (ladies who give up their whole time gratuitously to the work), and the plan is peculiar and good, the main portion being square, containing the requisite offices, chapel, dining room, paying wards, &c., whilst the main wards project out diagonally, so that each has windows on each side, which by this arrangement do not overlook each other.

At Dewsbury a new hospital has been erected, from the

design of Mr. Kirk, at a cost of about 17,000*l.*, and at Birmingham an Eye Hospital for 65 patients, by Messrs. Payne and Talbot. It is in the Renaissance style, in red brick and stone, and forms three sides of a quadrangle ; the cost was about 20,000*l.*

A large building is now being erected at Edrington, near Birmingham, for a convalescent hospital ; this being the munificent gift of Mr. Jaffray (of the "Daily Post" newspaper).

An Eye Hospital at Manchester, in the Queen Anne style, of brick and terra cotta, is nearly completed, from the designs of Messrs. Pennington and Bridgen.

At Newcastle the Corporation are about to build a Hospital for Infectious Diseases, from the designs of Mr. Gibson, in the Queen Anne style, at a cost of about 16,000*l.* There will be six detached double wards, with administrative block in the centre.

At Bolton an Infirmary, planned in four distinct blocks united by corridors on the ground floor only, has been carried out by Mr. Knill, at a cost of about 30,000*l.*, and a Convalescent Hospital, at about a similar cost, has been begun from the designs of Messrs. Medland and Taylor ; while at Southport a Convalescent Home, from the designs of Messrs. Paul and Bonella, at a cost of about 40,000*l.*, is being built.

At Wigan a new wing is being added to the Royal Albert Edward Infirmary, in the same style (Gothic) as the original building designed by Mr. Thomas Worthington. At Liverpool the Turner Memorial House of Rest (Gothic), designed by Mr. Waterhouse, A.R.A., and noticed in our last year's review, is now almost complete.

In a large proportion of these hospitals, &c., the walls have been lined with glazed bricks or tiles, the angles being rounded (so as to prevent any accumulation of dirt), and advantage has been taken of this material, as excellent in sanitary qualities as in appearance, to give the wards a cheerful aspect by the introduction of colour, and thus, by offering a cheerful effect to the eye of the patient, to do good, as Miss Florence Nightingale forcibly expressed it, to the body as well as to the mind.

Theatres.—Very large changes and improvements have been made in these, in numerous instances, under the requirements of the Metropolitan Board of Works, for insuring greater safety to the public in cases of fire or panic ; but these have been so well noted from time to time in the public press, that it is not necessary to recapitulate them here.

One new theatre deserves a somewhat special notice, viz., the

Comedy, at Manchester, now being built from Mr. Darbyshire's designs. It will have a frontage of more than 100 feet to Peter Street. The exterior is Venetian Gothic in style, the external facings being of red brick and terra cotta. Accommodation is provided for 2,500 persons.

Domestic Buildings.—Attention was called in the opening of this paper to the changes taking place in the designs for the domestic buildings in our cities, and one of the chief examples of this is the Alliance Office, a large building in red brick with terra cotta sculptured friezes, in St. James's Street and Pall Mall. It has an angular projecting turret, and large steep gables, but all the mouldings are Italian. The design is a very bold and striking one, by Mr. R. N. Shaw, R.A. Near to it in Pall Mall (with a frontage also to St. James's Square) is a small building of great merit, for the Royal Exchange Office, by Mr. Aitcheson, A.R.A., in the sculpture for which Mr. Boehm, R.A., will lend his aid.

Farther west others may be noted in South Kensington, by Mr. Ernest Turner and Messrs. George and Peto, some of whose red brick façades, very picturesque with their lofty gables and ornamental iron ties, would scarcely be out of place in the old streets of Bruges or Ghent.

At the west end of Oxford Street is a range of buildings in red brick and stone, designed and worked out in a very effective manner by Mr. T. C. Clarke.

Near Fetter Lane, in Bream's Buildings, is the Birkbeck Institute, designed by Messrs. Fowler and Hill, in a style which is difficult to class, having high gables, pannelled windows in the lower part, and mullioned windows throughout, but with a good Roman Doric frieze and Italian mouldings.

In Brick Court, Temple, the large range of chambers designed by Mr. St. Aubyn, in the late Perpendicular style, in red brick and stone, presents a very agreeable contrast with the plain, unadorned, and unpicturesque buildings which they adjoin.

On the Thames Embankment, opposite to the new Arundel Hotel, a range of offices and chambers is nearly completed, from the design of Mr. Boyes; and near to this, in the Savoy, a large block of buildings for Club Chambers, in a free Renaissance style, is about to be erected from Mr. Edis's designs, in red brick and terra cotta, at a cost of over 100,000*l.*

In the City, close to the quiet little quad between Warwick Lane and Amen Corner, for the design of whose pretty houses the Dean and Chapter are indebted to Mr. Ewan Christian, the

same architect is about to erect a new building for commercial purposes, adjoining to and harmonising with them. A stone fronted building, at the corner of Gutter Lane, in Cheapside, designed by Messrs. Ford and Hesketh, is picturesquely treated, with high gables, projecting windows, &c., with Italian details. Near to it a large warehouse in the Flamboyant style has been erected from the designs of Mr. Hayes, and another in the same style, by Messrs. Belcher, is rapidly progressing in Wood Street.

Further eastward, in the new street on the line of the Metropolitan Railway Extension, is a very effective building for offices, by Mr. Crockett, with high gables, angle tower, and lofty chimneys, but with Italian details.

Country Houses.—Judging from the drawings exhibited at the Royal Academy, the solid, staid-looking, brick-fronted houses of the last century will soon be contrasted all over the country with revivals of the half-timbered ones of an earlier date. Of the drawings showing country houses, thirteen had half-timbered or partly tiled exteriors, and the variations of colour which this construction affords, together with the outlines of lofty gables, large dormers, and bold chimney-stacks, have been used in many of the above designs with very agreeable effect. But the striped lines of the timbers are apt to become somewhat monotonous if not very carefully studied, and it was a happy chance which placed amongst these drawings Mr. Row's bold sketch of a Beauvais house. One drawing, by Mr. M. B. Adams, demands especial notice, as it shows a very effective design for a house partly half-timbered and partly tiled, to be erected at Sydney, New South Wales.

In some of the other drawings of country houses we have the sixteenth, seventeenth, and eighteenth century architecture reproduced—in one case with all its faults of detail—and we turn with pleasure from it to the carefully-studied quiet work of Mr. R. N. Shaw, R.A., at Dawpool, and of Mr. Prior's Manor Lodge.

Churches.—Indications of a seeming change in the working of some of our leading architects may be traced in the designs of churches in the Perpendicular in place of the earlier styles to which we have been accustomed. Good examples of this are to be found in the important boldly designed churches at Portsea, by Mr. Blomfield, and at Gainsborough, by Messrs. Clarke and Micklethwaite. In contrast with these may be taken the great church, 148 feet long, Late Norman in style, at Reddish, near

Stockport, by Mr. Waterhouse, A.R.A., and the Trappist church at Roscrea, in Ireland, transition to Early English, 225 feet long, by Mr. Beardwood. In the former the nave shafts are of polished granite, and the chancel screen, chancel, and sanctuary richly carved and decorated with rare marbles and mosaics. The tower, 113 feet high, is detached. The Roscrea church is without ornamentation, in accordance with the severe rules of the Trappists. As further good examples in the Early English style may be taken Mr. Brook's bold well-outlined design for Coppenhall Church, that at Llanberris, by Mr. A. Baker, and the grand Roman Catholic church, with transepts and Lady chapel, at Norwich, by Mr. G. G. Scott. Further north there is the picturesquely designed church at Merchiston, by Mr. Honeyman, and one by Mr. R. R. Anderson, with a grand and well-proportioned spire, at Govan.

At Liverpool an important church, with house for four clergymen, has been commenced, in the Early English style, by Messrs. Hadfield.

The places of worship, schools, and other buildings of the Nonconformists are now assuming an importance which contrasts favourably with their former prosaic buildings.

As examples may be taken, schools, &c., at Lewisham, by Mr. Sherrin, and the Presbyterian church (Perpendicular), by Messrs. Banks and Townend, at Hartlepool.

The following are especially remarkable for the great variation in their plans (hexagonal, &c.), from the ordinary type, viz. at Upton (Perpendicular), by Mr. Banks; at Newcastle, also by him, and the large one, 48 feet diameter, at Hampstead, by Mr. Waterhouse, A.R.A. The design by Mr. Carae for the Swedish church (Gustaf-Adlf-Kyrka) at Liverpool is very peculiar, but not at all likely to be imitated in this country.

A complete variation in point of style from the whole of the above is found in the Presbyterian church at Hillhead, Glasgow, which has a Corinthian portico, designed by Mr. T. L. Watson.

There was one drawing by Mr. Sherrin in the Royal Academy Exhibition, of workmen's cottages, in which some attempt was made at giving artistic effect to a range of them to be erected at Halstead. Little enough has been done in this way, and yet it is well worth the consideration of architects. Our grand mansions in the country lie usually well hidden in their parks or gardens, and comparatively seldom enter into the traveller's view on our great highways; but the labourers'

cottages line well nigh every road. They are associated with all our ideas of English country life, and are worthy of something better and more pleasing in the way of design than to be ranged in long lines of two-storied buildings all of the same size and pattern. A slight difference in the sizes of the houses—a gable or a dormer here and there for an extra room in the roof, would, in skilful hands, produce the pleasing effect required, and make the inmates feel some pride in their houses.

Amongst the various works now being undertaken for the better housing of the working classes and raising their social condition, the new parochial buildings in Little Grosvenor Street, London, deserve especial notice, as they comprise not only dwellings, but a large hall, library, and gymnasium.

The further consideration of this subject falls under another section of the "Companion."

Buildings for Educational Purposes.—In these the old Universities take the lead, those at Oxford being of stone, as were those of old times, whilst those at Cambridge are (equally in harmony with the old colleges of St. John's, St. Catherine's Hall, &c.), of red brick and stone.

At Oxford are the buildings by Messrs. Bodley and Garner, for Magdalen College, in the High Street, a late Perpendicular work of high merit. At Brasenose College, one side of a new quadrangle has been begun from the designs of Mr. Jackson, an effective composition, having high gables and mullioned windows, but with Renaissance details, though these are somewhat less pronounced than in his schools in the High Street, one of the largest and most effective additions made, of late years, to the University. Still more Italian in detail, though with high gables and mullioned windows, is the Indian Institute by Mr. B. Champneys, which is, unfortunately, in so narrow a street that it cannot well be seen from any point of view, especially as the lines of its frontage are not parallel owing to the irregular lines of the ground on which it is built.

At Cambridge, the chief addition to the Colleges is that to Jesus, by Messrs. Carpenter and Ingelow, consisting of detached houses for Fellows, and a long range of buildings with central tower, forming the longer side of a new court to be entered from the present cloister. The new buildings are of good Perpendicular work, and will bring the fine chapel into the general plan of the College, with respect to which its position, as seen from the east, is at present scarcely dignified. The new

Cast Museum, designed in the Italian style by Mr. Basil Champneys, under the advice of Professor Colvin, is a most creditable addition to the University, and will be noticed in connection with the Cast Museum at South Kensington. A new wing is being added to the Union by Mr. A. Waterhouse, A.R.A., for a new library and tea room in continuation of the style of the present buildings (also by the same architect), to which it promises to make a very effective addition.

Mr. Waterhouse adheres to the system followed by nearly every architect of the old times in their red brick buildings, viz., toning down their bright red tints by the introduction of dark grey bricks in bands or other forms.

At Girton College the same architect is making, for the third time, an addition, the chief features of which are a fine large library and a circular staircase, giving somewhat more interest to the look of the buildings than they had before.

In London numerous School Board buildings have been erected by Mr. Robson in the same style by which any of those buildings are at once known to be from his design. But the variation in outline both of elevation and plan, and the differences in size and shape of the schools show great skill and prevent the sameness which would result under different conditions. A very large addition is being made by Mr. Robson to the offices of the Board on the Victoria Embankment, the style of the original building being adopted in the new.

At Bristol the large building designed by Mr. E. C. Robins, at a cost of 35,000*l.*, for the School of the Merchant Venturers, the oldest guild in Bristol, is nearly completed. It occupies a commanding site 180 by 110 feet in Unity Street, near the College Green. It is Dec. Gothic in style, built of red bricks and stone, and contains class and lecture rooms, chemical and physical laboratories and other requirements for thorough teaching in trade, mining, and engineering schools.

At Leeds the new buildings of the Yorkshire College (erected by the London Clothworkers Company) are nearly complete. They are designed by Mr. Waterhouse, A.R.A., in the Early Gothic style. They comprise chemical and other laboratories, small lecture rooms for classes, &c. The central museum, &c., are not yet commenced.

At Manchester the enlargement of Owens College is being rapidly carried on by the same architect, and will form a fine addition to the street architecture of the city. A drawing of

the staircase (a very effective design) was at the Royal Academy. The central Board School in Deansgate, six storeys high (including basement), in brick and stone, designed by Mr. Henry Lord, has been opened. The chief feature of the plan is a central hall, 72 by 32, having groups of desks three deep on each side, and this arrangement is locally considered to be very good.

A new Board School at Sheffield, erected from the design of Mr. Innocent, for 1,250 children, is on rather an unusual plan, viz., that of twelve class rooms radiating from the sides of a polygonal central hall.

At Ellesmere one of the largest of the middle class schools now being built in various parts of the country has been partly completed and dedicated, the design being by Messrs. Carpenter and Ingelow, in a Late Gothic style. It will form two open quadrangles, with chapel, hall, &c., recalling, in modern times, old college arrangements.

At Carlisle the Grammar School buildings have recently been completed in a Tudor design in red brick by Mr. G. D. Oliver, at a cost of about 12,500*l.*

In Edinburgh the University Extension buildings, designed by Mr. R. R. Anderson, form a very fine well composed block in a free Italian style.

Museums.—At Newcastle, H.R.H. the Prince of Wales has recently opened the New Museum, designed in the Classic style by Messrs. Wardle, and erected at a cost of upwards of 40,000*l.* Its chief features are three galleries, each 40 to 50 feet wide, and upwards of 100 feet long. Class rooms, &c., are also provided. Near to this is the Public Library, also in a Classic design by Mr. A. M. Fowler, for an admirable collection of books of art and science. The main gallery is a noble apartment 130 feet long.

The Museum of Casts at South Kensington, although not a new building, deserves especial notice in conjunction with the museum recently erected at Cambridge, as an adjunct to the Fitzwilliam. Each has been arranged by a most competent man, viz., South Kensington by Mr. Perry, and Cambridge by Professor Colvin, and each shows, as no other collection of sculpture in England does, a series of casts of the most celebrated statues; educational studies from early examples to the finest of the Greeks.

But each Museum suffers fearfully from the want of space, and the consequent want of power to study the examples in the best way.

What is clearly required is: 1st, to have them, or copies of them, placed in somewhat the same position and light as that for which their sculptors designed them; and 2ndly, to place either of these so near the eye as that the methods by which the effects were produced can be accurately studied.

This was done at Berlin in the shed in which the Olympian sculptures were temporarily arranged, one set being placed high up, enclosed in the proper sloping mouldings of the Tympan, whilst another set was placed below, so that it could be studied closely with facility.

Somewhat of the same kind of arrangement was carried out at the British Museum, where the Egina casts were fixed as high as the old gallery would allow and enclosed in their proper pedimental mouldings. The advantage of thus putting the architectural frame to the sculptures is most felt in the case of a tympan in which the enlosing sloping lines explain, at once, the reason of the recumbent and other positions of the statues; but, even when the enclosing lines are parallel, the advantage of having the enclosing lines is great. This is strikingly evident at South Kensington, where two groups of sculptures from Pergamon are placed close together, the one merely flat against the wall, and the other enclosed by such bold mouldings as it had in its original position.

In the new and more lofty gallery (between the Greek and Assyrian) in the British Museum the friezes from Halicarnassus have been arranged somewhat as above described, the original close to the eye, and copies at a much higher level, and it is, one may venture to say, no fault of Professor Newton that the sculptures generally are not treated in such an advantageous way as that in which he has arranged these. Another advantage of having the copies placed in their natural position, and the actual sculptures near the eye, would be that the former might be restored in such a way as the most able sculptor might think right, so as to give the probable effect of the complete work, the originals being left near to the eye, in their natural state, untouched, for minute study. At Munich, the Egina marbles, which can be seen *only* by the light of side windows and close to the eye, have been entirely restored; and although this restoration is by Thorwaldsen and each new part is carefully noted in the catalogue, it is a somewhat unsatisfactory mode of treating original sculptures of 500 or 600 years B.C., by sculptors who lived some twenty-five

centuries after. The pretty little museum, beautifully situate at Constantinople, and having an excellent catalogue by M. Reinach, is gradually acquiring important works of art.

International Exhibitions.—The buildings erected at South Kensington for the Fisheries Exhibition have been improved, in many essential particulars, for its successor the Health Exhibition, and may be usefully contrasted with those for Turin, which were opened in the early part of this year. With us, the idea has been, from the 1851 Exhibition to the present time, to cover as much ground as possible in the most economical way, leaving any artistic effect to be added, if at all, by the exhibitors themselves. Sir C. Barry's happy idea of the circular roofs saved the 1851 building from the charge of ugliness, but the economical principle was carried to an extreme in the sheds erected for the Fisheries, the roofs of which, pleasing internally from their circular form, in spite of their rudeness, had to be propped up for their safety by wooden shores outside; these shores, together with the rough boarding and naked timbers, being left in their nakedness, as simply a matter of no importance. Thanks to the conductors of the Health Exhibition, this prominent defect has to a considerable extent been remedied, the exterior of the building now presents, for the most part, a much more creditable appearance, and the open quadrangle at the north end has, perhaps, as pleasing an effect as a mere temporary erection can be expected to give. But the Continental buildings, of which we may take Turin as an example, are designed on an entirely different principle from ours. Their promoters consider that the buildings are not only to be useful, but to give pleasure to the eye as well, and with this view each portion of them is carefully studied from the first.

Exception may be taken to some parts of the design, but, small as the Turin Exhibition is compared with that of London, and inferior as it is from this cause and from the absence of the terraces and gardens which add a charm to ours, it presents many effective features, and shows a care in the design of the whole, the want of which was painfully apparent in the original Exhibition of the Fisheries, and is so in parts even now.

One architectural adjunct to our Health Exhibition deserves special notice, viz., the clever reproduction by Mr. G. H. Birch, of houses, shops, &c., from the streets of Old London, requiring only the old paving, with its foul central gutter, water-

spouts, &c., to enable all to realise, in a very striking and practical way, how much we have gained in sanitary work, and lost in artistic. At the Turin Exhibition a similar reproduction of old work has been presented, but on a larger scale, the keep of one of the old Piedmontese castles, as well as part of an old town, having been copied, and every apartment, from the guard-room to the state bedroom and chapel, fitted up in a very costly way, with the arms, furniture, and decorations of the period.

Although no architect was appointed on the Health Exhibition Committee, and Captain Douglas Galton alone represented the engineers, architects have had their full share of the work, both on committees and juries, and one of the Conferences which were held weekly at the Exhibition was conducted under the direction of the R.I.B.A., when a complete set of papers bearing on the sanitary construction and decoration of buildings was read under the presidency of Mr. Ewan Christian, F.S.A., Mr. Waterhouse, A.R.A., and the Rt. Hon. A. J. B. Beresford-Hope, M.P.

In order to bring practically under public notice the sanitary precautions necessary to be taken towards procuring a healthy home, the Executive have constructed a house showing some of the worst features of drainage, water-supply, &c., and another which shows clearly to everyone the proper method of carrying out such works.

Altogether, it will not be the fault of the Executive Committee if sanitary measures generally be not promoted by the Exhibition, and they have the full right to state that there is no department of sanitary science which has not been thoroughly well represented, and that in its entirety the Exhibition was, beyond all question, superior to that at Turin.

The Parkes Museum, recently opened by H.R.H. the lamented Duke of Albany in Margaret Street, in which are collected some of the best specimens of sanitary appliances, and also (for educational purposes) some of the worst, will, it is hoped, be able to continue the promotion of the above object by its exhibition of these appliances, its courses of practical lectures, and its excellent library of books on health.

A special exhibition of carpenters' and joiners' work has been held in the hall of the Carpenters' Company, and has brought together, most usefully, specimens of practical and ornamental work of all kinds, both British and foreign.

The Provinces.

Beyond the works already noticed under their several heads, the following deserve record :—

The eastern portion of the Cathedral at Truro, the work of Mr. Pearson, R.A., is roofed in, and the main portion is groined. This eastern part comprises the choir and aisles, eastern transepts, and old south aisle. The great south transept and baptistry are far advanced, but the works to the west transept, &c., are being delayed from want of funds.

At Bristol some extensive offices, with a frontage of about 100 feet to Baldwin Street, are being erected from the designs of Mr. Williams for the "Western Daily Press."

At Bradford (Yorkshire) a new Post Office is about to be built in the Italian style from the designs of Mr. H. Tanner, architect for the north district of Her Majesty's Office of Works.

At Sheffield, a large range of offices, well-studied and effective, in the Tudor style, has been erected in red brick and stone in a prominent position in the High Street, by Messrs. Hadfield. These offices, together with the Corn Exchange (an important building having a frontage of 225 feet, recently erected by the same architects for the Duke of Norfolk), are very noteworthy additions to the town.

At Birmingham an important range of buildings in Corporation Street is being erected for the Midland Educational Company, from the designs of Messrs. Phipps in the Renaissance style.

At West Bromwich the new Institute buildings are designed by Messrs. Wood and Kendrick in a very effective rendering of the Perpendicular style, and are being built of red bricks and terra cotta. They include reading and class rooms, a spacious room for drawing, lecture room, laboratories, &c. The cost wil be about 8,000*l.*

At Hull the new Borough Asylum for 700 patients is being erected from the designs of Messrs. Smith and Broderick, at a probable cost of about 60,000*l.*

Manchester.—The Standard Life Office, designed in Late Gothic style by Messrs. Clegg and Knowles, has been completed in stone, and the Commercial Union Insurance Office, also of stone, and French Renaissance in style, is in progress, from the designs of Mr. Heatherly.

The "Manchester Guardian" Office is being rebuilt in red terra cotta, on Messrs. Burke and Ellis's design.

The larger part of the new General Post Office, an important building 78 feet high, with a frontage of 246 feet to Brown Street, and of 122 feet to Spring Gardens, in the Italian style, has been nearly completed under the direction of the official architect to Her Majesty's Board of Works.*

The London and North-Western Railway have recently opened their large new Exchange station. The site is a very fine one, and it is greatly to be regretted that the building is so unsatisfactory in its external appearance, especially on the Salford side.

The City Corporation Art Galleries have been re-arranged on a scheme proposed several years since by Mr. Worthington, chairman of the committee, and the Corporation has also built a new Art Gallery and Museum in the Queen's Park.

An extensive building, chiefly of brick, in the Italian style, has been carried out by Messrs. Worthington and Elgood for upwards of 100 of the draughtsmen and clerks employed by Messrs. Beyer and Peacock.

The Nicholls Hospital for 100 boys, a large building, Gothic in style, in brick and stone, with a large gymnasium, has recently been erected from Mr. Worthington's designs.

At Liverpool large Sessions Courts have been built and fitted up under the direction of the official architect to Her Majesty's Board of Works.

The School of Art adjoining the Picton Library is completed in the Classic style by Messrs. Cook.

At Glasgow a new Inland Revenue Office, of a bold but somewhat coarse design, has been erected under the direction of Mr. Robinson, of Her Majesty's Office of Works, Edinburgh.

Extensive premises for mercantile purposes in Buchanan Street and St. Vincent Street are from the designs (respectively) of Messrs. Douglas and Sellars, and of Mr. J. J. Stevenson.

The new central station and hotel, by Mr. R. R. Anderson, are in the Queen Anne style, with very good details.

In Dublin the Hibernian Bank, College Green, by Mr. Drew, shows a very good, free Renaissance design, the emphatic lines being horizontal. The Exhibition building which was formerly in this city has been removed to the side of Battersea Park, and there re-erected with considerable additions in stone, under the

* It may be noted here that the subject of the extensive works now being carried out under the direction of the officials of the Board of Works, and the much larger attention paid by Foreign Governments to obtaining designs which shall be creditable to the country, has been well treated in a small book by Mr. W. H. White, Secretary to the R.I.B.A., on Architecture and Public Buildings in Paris and London.

directions of Messrs. Bell and Muller, as the Albert Exhibition Palace.

Decoration.—Decorative work of, perhaps, a higher class than usual is being done.

Mr. Armstead, R.A., has assisted, as before mentioned, at the Holborn Restaurant, and Mr. Boehm, R.A., is about to do the same at the façade of a new public office in Pall Mall.

At Wortley Hall Mr. Poynter, R.A., has designed the colouring and stained glass.

Mr. Aitcheson, A.R.A. at the Royal Academy, and Mr. Crace at the Architectural Association, have given most interesting lectures on decorative art and materials.

The designs by Sir F. Leighton, P.R.A., and Mr. Poynter, R.A., for the decorative mosaics in the dome of St. Paul's have now been drawn out—full size and coloured—and placed in their proposed positions in the dome. Their general features are based on those of Mr. Stevens' design, and, as at St. Peter's, Rome, and the Invalides, Paris, divide the surface into sections by definite lines radiating from its springing to the top.

A full-sized cartoon of the design by Mr. Stannus has also been placed in opposition to the above, so that the merits of the two designs can easily be compared, and the greatest credit is due to the Dean and Chapter for allowing a comparison to be made in so practical a way. But the most important point of all is scarcely raised by the comparison, viz., whether the pictorial treatment, however beautiful each picture may be, is that which will have the best effect in mosaic. In St. Marc's, at Venice, the pictorial mosaics of the sixteenth and seventeenth centuries are in sharp contrast with those in the severe style of some five or six centuries earlier, and the result is not favourable to the later designs. Another point of the greatest importance not raised by a comparison of the designs is whether the dome should be divided into sections as proposed in each. There are few examples of the treatment of great domes in rich colouring.

But it will be generally admitted that one of the grandest effect in internal decoration is so produced in the Sakhrah, at Jerusalem, where the magnificent sweep of the dome is unbroken by such vertical lines as are proposed for St. Paul's; and, remembering also the fine effect of the mediæval dome of St. Marc's, one should hesitate before adopting such definite division in the grandest part of Sir C. Wren's cathedral.

Competitions.—Their history for the year is somewhat remark-

able. At Dublin the first competition for the new Science and Art Museum having been ignored, a second took place. In this more than fifty designs were sent in, and five of these were chosen for final competition, the Committee of Selection comprising only one architect (Mr. McCurdy) amongst its eight members. Mr. Deane's design was finally selected, although the estimated cost is 140,000*l.*, whereas the conditions limited it to 100,000*l.* The building will be a very important one, with a frontage to Kildare Street of about 600 feet.

The competition for the new War Office and Admiralty buildings was still more important, and although some of the conditions may with reason be objected to, there can be no doubt that Mr. Shaw Lefevre's wish has been to conduct it with perfect fairness, and to obtain the best designs which he could procure.

To three non-professional assessors he added two architects, Messrs. Ewan Christian, President of the R.I.B.A., and Hardwick, whose names were guarantees that the selection would be made in the fairest way.

One hundred and twenty-eight sets of drawings were submitted in a first competition, and out of these nine were selected for the second, the result being that the designs by Messrs. Leeming were finally chosen.

Their designs were set forth in drawings which were admirable in point of execution, but if these plans and elevations are to be considered as embodying the greatest effort of architecture which this country can now produce, the result can scarcely be considered as satisfactory.

A large model of the proposed building is to be made, and this may lead to great improvements.

Unfortunately none of the designs except the nine selected have been exhibited.

In a competition for the proposed new cathedral at Liverpool, the Committee adopted a somewhat new method of obtaining designs, being an extension of that at Truro, wherein a few selected architects were requested to send in drawings of designs made by them for churches already built or designed. At Liverpool the competition was on the above basis, but open, and ninety-nine sets of drawings were sent in. Mr. Ewan Christian was appointed as architectural assessor, and the Committee finally selected the four undermentioned gentlemen, who are requested to send in competitive sketch designs before May

next—Messrs. Bodley, A.R.A., J. Brooks, W. Emerson, and Pearson, R.A.

At Leeds there has been a competition for a new Conservative Club, and Mr. Corson, the assessor, awarded the first premium to Mr. Bulmer; but the Committee put this award on one side, and selected the design of Messrs. Smith and Tweedale, who had been placed third by the assessor.

These things do not seem to be much better managed abroad. The grand competition for the national Italian monument to the late King Victor Emanuel was, at the outset, unsuccessful, as the design (by Menot) which received the first prize was found to be impracticable.

In a second competition there were 100 competitors, and the designs of Sacconi, of Rome, Schwiz, of Dusseldorf (both much on the same general outlines as those of Schwanthaler and Von Klenze's Bavaria at Munich), and Memfredi of Piacenza were selected. It was then arranged that each of these gentlemen should be paid 10,000 lire, and make a model for final selection, and it is now understood that Sacconi's design has been adopted.

Memorial to Lord F. Cavendish.—A melancholy recollection of a terrible recent crime is awakened by the mention of a competition for the above. A design by Messrs. Worthington and Elgood was selected, being in the form of a massive square tower, with circular stair turret, standing on a terraced platform 50 feet square.

This it was proposed to erect near Bolton Abbey, but the question of site is still in abeyance.

Statues.—This year will be noteworthy for the permanent removal of the Duke of Wellington's statue from the top of the arch opposite Apsley House, and for the rebuilding of the arch itself on another site.

The statue has been removed to Aldershot, and a new one modelled by Mr. Boehm, R.A.

It is proposed that a quadriga should be placed on the arch as proposed by the architect, Mr. Decimus Burton, and that the open spaces in front of it should be adorned in some way not yet determined on and which depends upon the amount of public subscriptions for the work, neither the Government nor the Metropolitan Board of Works considering this subject to be their business, and leaving it to the influence of the Prince of Wales, ever forward in such work, to procure the requisite funds.

A new statue of great merit, by Mr. Boehm, of the great reformer, Tyndale, has been placed in the gardens of the Thames Embankment.

In Edinburgh a group by Sir J. Steel, R.S.A., sculptor of Alexander the Great and Bucephalus, has been erected at the end of George Street, and it is intended to erect in Princes Street Gardens a memorial to the late Duke of Buccleugh from the designs of Mr. R. Anderson, with a statue by Mr. Boehm.

An article in the "Nineteenth Century Review," by Mr. J. S. Lefevre, the zealous First Commissioner of Her Majesty's Works, on the statues and monuments of London must not be passed without notice.

Sculpture is very closely allied with architecture, and some very interesting lectures embracing both subjects have been given by Professor Newton, at University College, on the Lycian sculptures, whose general character and details lead him to fix the date of the Harpy tomb at *c.* 520 to 500 B.C., and that of the Ionic monument not earlier than 360 B.C. and the rock tombs at *c.* 350 to 300 B.C.

The sculptures brought to Berlin from Pergamon and to Vienna from Djolbaschi were described in the above lectures, and in others at the Royal Academy, and the structures of which they formed the decoration open to us new examples of Grecian architecture. At Pergamon the gigantic altar of Zeus (possibly referred to in the Apocalypse as the throne of Satan) was, if the German restoration be accepted, approached by a lofty flight of steps, and enclosed on three sides by a colonnade which rested on a massive podium richly sculptured.

At Djolbaschi, one of the great tombs (not yet removed) of the Lycian type was placed in the midst of a quadrangle, enclosed by a wall of good masonry to which the sculptures formed a highly decorative frieze.

Restorations.—The principal work in England has been at Peterborough Cathedral, the central piers of which are being rebuilt under the direction of Mr. Pearson, R.A.

The pulling down of the old piers showed a weakness and carelessness in the original construction, which no one unacquainted with the frequency of such defects in Norman work, and looking at its external massiveness only, could have suspected.

At Lichfield the restoration of the west front is nearly completed, a few statues only being still wanting.

The central tower at Sherborne Abbey is being carefully restored under Messrs. Carpenter and Ingelow.

At Manchester the works at the cathedral are progressing, those to the nave being nearly finished. A north porch, with muniment room over, will shortly be added by Mr. Crowther, the architect.

The three entrance portals to the north transept of Westminster Abbey are completed with the exception of the sculpture to the tympan, and form a very fine addition to the beauties of that church, being, in fact, one of the grandest triple entrances of any cathedral in our land.

The main portion of the church of St. James, Paddington, erected not many years since by the late Mr. Goldicutt, has been pulled down and rebuilt on a larger scale after designs made by the late Mr. Street, R.A.

Another reconstruction, though on a smaller scale, is being carried out at the parish church of St. Marylebone, originally designed by Mr. Hardwick (the first of that well-known family of architects), by removing the upper gallery and adding an apsidal chancel 50 feet deep, decorated with rich marbles and mosaics from the designs of Mr. Harris. The wall spaces, after the removal of the gallery, will be decorated with paintings from the designs of Mr. Armitage, R.A.

The proper treatment of the (now exposed) west side of Westminster Hall is likely to be one of the most prominent subjects of architectural discussion for some time to come.

When the new Law Courts were opened the old ones were pulled down, and although one cannot help regretting the loss of Sir John Soane's work (one of the most ingenious specimens of planning known), the view thus obtained of the old hall is a strong consolation for the loss.

But the walls and buttresses were in such a state as to require considerable restoration, and Mr. Pearson, R.A., after a careful examination of them and of several drawings which gave representations of the former adjuncts to the hall, came to the decided conclusion that there had been a cloister and range of rooms or gallery over the whole length of the hall. His proposal for reconstructing these met with strong opposition in the House of Commons, and the subject is still in abeyance.

It must be borne in mind that when Sir C. Barry proposed his building to the west of the hall, he considered that he would be

merely screening the Law Courts, the destruction of which was not then decided on.

A remarkable and most commendable restoration of an old building has taken place at Plymouth, where the old Eddystone Lighthouse has been re-erected as a memorial to Smeaton, in a conspicuous position on the Hoe.

Earthquake in Essex.—In connection with restoration this new element of destruction in England must be noticed. The diocesan architect, Mr. J. Clarke, had to report that the tower, nave, and chancel of Great Wigborough Church, and the rectory-house near, were seriously injured, and the whole fabric of Little Wigborough Church was still more so, putting it in a dangerous state, and necessitating its entire rebuilding. The churches of Peldon and Wivenhoe were much shattered and Langenhoe Church was completely wrecked. Nearly all the school-houses and other buildings of a more humble class in the district north of Colchester were more or less injured.

Excavations, &c.—The chief work which has been done in England of late has been that at Bath, where the excavations of the large remains of Roman baths has been continued, with most interesting result, showing the method of the water supply, the lead linings of the bath and other details not usually found. When the houses which now encumber the site are still further cleared away the ruins will furnish one of the most interesting remains of antiquity in our country, and be very creditable to the public spirit of the city.

At Buckfast Abbey, Devon, the whole of the foundations have been uncovered, and have disclosed a typical Cistercian plan.

On the Continent, at Treves, large remains of Roman baths have also been discovered and partly excavated. They must have been part of an immense building, one frontage having been apparently 560 feet long.

Archæologists will no doubt regret the loss of the important mediæval walls which surround Cologne, but the fine old gateways (the Hahnen, Eigelstein, and Severin) have been retained (like the old west gateway at Canterbury, and as will doubtless be the case with Hogarth's at Calais) and give a very picturesque ending to many of the main streets. No one who has walked through the streets of Cologne, and compared the bright and healthy aspect of those near to which the fortifications have been removed with those still sunk down, as it were, and overshadowed by the lofty walls, could wish to see the old state of things restored.

At Rome, the House of the Vestals has, somewhat unexpectedly, been met with, and the walls of a long atrium, &c., disinterred, together with remains, more or less perfect, of numerous statues.

At Ephesus, the work of the excavation on the site of the Great Temple has been resumed, under considerable difficulties, by the able and persevering discoverer, Mr. Wood; but the refusal of the Government to aid, even to a small extent, with funds, caused the work to progress very slowly, and one sees, with somewhat envious feelings, the accessions to the Museums of Berlin and Vienna of the sculptures from Pergamon and Djolbaschi.

Mr. Wood described at the R.I.B.A. in June last the progress which he had made, but the excavations are not yet so far complete as to enable him to solve with certainty many interesting questions connected with the great Temple, and he still hopes that funds may be raised to enable him to complete the work.

The Russian Government is pursuing its explorations at Kertsch, and has obtained numerous specimens of Grecian gems, terra cottas, silver ornaments, &c., of much beauty.

In Greece the excavations at Epidauros and Eleusis, which were stopped for a time, are now being resumed, and those at Olympia have, since the retreat of the Germans, been continued by the Athenian Archæological Society in the direction of the Gymnasium and Palæstra. At each of these places, and at Mycene, a building has been fitted up as a museum, in which the small sculptures, &c., not removed to Athens are securely housed. At Tiryus Dr. Schliemann has laid bare the foundations of the building on the upper platform, and has discovered the extensive remains of a palace or temple, the bases of twenty-seven columns, and several portions of coloured decoration on plaster, some of which recall the forms of those found at Orchomenos. But in making these discoveries he has utterly ruined the antique appearance of the venerable fortress, whose external walls are now concealed to a very large extent by the *debris* which has been recklessly thrown over them.

In Syria and Palestine the Palestine Exploration Fund has enabled its explorer, Captain Conder, R.E. (the able successor to Sir Charles Wilson, Sir C. Warren, and Major Kitchener), to discover the site of the interesting city of Kadesh on the Orontes.

East of the Jordan he has discovered in Moab a series of

more than 700 rude stone monuments in and about Mount Nebo, and other remains of great interest.

The memoirs and maps of Western Palestine are now complete "from Dan to Beersheba," but the country still further north and south, and also east of Jordan, abounding in architectural remains of a most interesting character, still awaits exploration.

In Egypt Mr. Petrie (whose exhaustive descriptions of his work at the Great Pyramid has recently been published) has discovered the ancient Necropolis of Zoan, the capital of the Hyksos kings, together with large remains of its Great Temple and other works of Rameses II and Manepthah I.

Sir Erasmus Wilson, who contributed so liberally to the explorations in Egypt, lived but a short time after Mr. Petrie's discoveries were made known.

Of lectures on architecture, &c., other than those already noticed, should be mentioned those of Mr. Poynter at the Royal Academy, on Egyptian, Assyrian, and Greek art, in which he showed that although the Greeks borrowed forms of art from Egypt and Assyria they took quite an independent course in adopting them. Highly interesting lectures also on the architecture of Egypt were given at the Royal Academy by Mr. R. S. Poole.

Indian art was well treated by Mr. Emerson at the R.I.B.A., and by Mr. P. C. Clarke at the Society of Arts, both gentlemen having large experience of the subject.

At the South Kensington Museum excellent specimens of Indian architecture, viz., the actual fronts of two houses at Ahmenabad and a splendidly-carved ceiling from Cochin, sent over by Mr. P. C. Clarke, have been exhibited, and are further instances of the fact that the most exquisite carving of natural or conventional ornament may coincide in date with the most deplorable sculpture of the human figure.

By giving the whole frontage of the two houses, a good idea of the effect of such buildings can be formed in a way which no number of detached pieces, such as we are accustomed to see in our museums, can convey.

The subjects of the education and position of architects here and in France was well treated by Mr. W. H. White, the able secretary of the R.I.B.A., in a lecture there last autumn. At the conference held in May last at the R.I.B.A., a series of most interesting papers was read, and discussions were held on

various subjects in literature, science, art, and general practice which more immediately affect the profession.

Societies' Excursions.—The Archæological Institute held its meeting in August at Newcastle-on-Tyne, whence the members visited Alnwick and Bamborough castles, Monkwearmouth and Jarrow churches, the Roman wall, and other interesting objects.

The Archæological Association visited Tenby, Pembroke, St. David's, and the interesting objects in the country near.

That very useful society the Architectural Association made a very successful visit to the eastern counties, where the members were enabled to inspect the grand churches of Long Melford, Lavenham, Mildenhall, &c.

Foreign Buildings.

Of those completed must be noticed an exceptionally interesting one, viz., the Hotel de Ville at Paris, recently rebuilt after its destruction by the Communists.

On the other hand we have to record the complete demolition of the central portion of the Tuileries, also burnt at the time of the Commune. Various suggestions were made for its restoration, but it was finally decided to remove it, and the old historical palace is gone.

The irregularities now exposed in the plan of the Louvre are scarcely so prominent as might have been expected, but from a central position in the gardens the arch in the Place du Carousel shows painfully out of line with the buildings of the Louvre.

At Brussels the Law Courts, begun from the design of M. J. Poelaart, have been opened. During his serious illness their details were unfortunately carried out by an engineer, with results which may be imagined. These Courts form one of the most important buildings of modern times, occupying nearly three times the area of Mr. Street's law courts, and it is deeply to be regretted that so grand an outline should have been so wretchedly filled in.

At Berlin the chief edifices of late date are those at Charlottenburg for the technical education of architects, engineers, &c.

The principal building is upwards of 700 feet long and 160 feet deep (more than twice as long and twice as deep as our City and Guilds Institute), four storeys high, with a grand central hall and staircase. The elevation is Italian in style, bold and grand in effect, and highly ornamented inside, the

German idea being quite opposed to that generally entertained in our country, which is that, provided the building be large enough and well lighted, nothing is gained by making it pleasing to the eye and cheering in effect to the students.

At Vienna the public buildings in the Ring Strasse, a noble street surrounding the old town on the site of its old fortifications, are rapidly approaching completion, and the Rathhaus, by Schmidt, is already handed over to the city. It is a grand pile in the Pointed style, with nearly 500 feet frontage and a depth of 404 feet, and is said to have cost one and a quarter millions sterling.

The University is by Ferstel, and is a very carefully-designed work in the Renaissance style.

The two museums (Italian) by Harsenaler and Semper, unfinished as yet, are decidedly unequal in point of merit to the above, or to the Houses of Assembly and the Bourse by Hansen.

In Greece more work is being done than might be expected of this small kingdom, this result being chiefly owing to the liberality of Greek merchants, &c., who have realised fortunes abroad, and then devoted a large portion of them to the adornment of their native land.

The Museum at Olympia is now being erected at the expense of M. Toggros, and the Academy of Science at Athens at the cost of Baron Sina, from the designs of MM. Hansen and Ziller, the baron having also defrayed the cost of the Observatory, erected from the designs of M. Hansen.

All these buildings are thoroughly good adaptations of the ancient national Greek style of art, both in general design and in details, and it is a pleasing conclusion to a summary of works carried on in various countries, in all kinds of styles, to have to record that in that one country to which we all look as having been the greatest in every department of art, the old ways are still those of the present time—a grand revival after all the ages of wars and oppression and decay.

T. Hayter Lewis.

THE ART EXHIBITIONS OF THE YEAR.

THE year 1884, if it has not produced anything very new or wonderful in painting or sculpture, has been very fertile in exhibitions of pictures. It commenced with an important addition to the usual winter gatherings—the first Exhibition of the Institute of Painters in Oil Colours, which took the place of the usual Winter Exhibition of the Royal Institute of Painters in Water-colours. Throughout the season, besides the Royal Academy, the Grosvenor, the Water-colour Societies, and other well-known annuals, a number of small collections of pictures, some miscellaneous, some devoted to the works of a particular artist, succeeded one another without intermission. On the other hand, the United Art Gallery in Bond Street has ceased to exist, and the Painter-Etchers' Society have not held their exhibition in London this year. The need for a gathering of oil pictures in the winter, large enough to fill the new rooms of the "Institute" in Piccadilly, may be doubted. Though the walls were covered, the contributors were mainly artists whose work comes on other occasions before the public, and though the average merit of the works was tolerable, there was no picture of extraordinary excellence. The Institute of Painters in Oil Colours is largely recruited from the ranks of the Royal Institute of Painters in Water-colours, and includes within its ranks some well-known members of the Royal Academy. Such a sign of union between the hitherto two distinct branches of the profession of painting is to be welcomed. The Exhibition, which was open to all comers, contained good pictures by Messrs. Alma Tadema, P. R. Morris, Marcus Stone, E. J. Gregory, J. D. Linton (the President), Van Haanen, F. D. Millet (the American), and others. The most remarkable of the Winter Exhibitions was the assemblage at the Grosvenor Gallery of over two hundred paintings by Sir Joshua Reynolds. This is the largest collection of the works of this artist which has yet been made, and justified his reputation as the greatest portrait painter and colourist of the 18th century. Amongst the most important works were the elegant group of "The Ladies Waldegrave," the imperial "Mrs. Siddons as the Tragic Muse," and "The Duchess of Devonshire and her Child." The famous portrait-groups of the Dilettanti Society were also here, and no less than nine likenesses of the artist himself. The owners who contributed most largely to the collection

were the Earl of Albemarle, the Duke of Devonshire, the Marquis of Hertford, the Earl of Morley, the Earl Spencer, and Dr. Hamilton. Of portraits of beauties "in character," perhaps the finest was one of "Mrs. Nesbitt" as Circe, and the "Strawberry Girl" was the most celebrated of the fancy portraits of children. Of poetical subjects the chief were "The Nymph," left by Sir Joshua to the Earl of Upper Ossory, and the Queen's "Cymon and Iphigenia." Amongst the most charming of the half-lengths were portraits of Mrs. Abington, Lady Ann Bingham, the Lady Elizabeth Keppel, and Lavinia, Countess Spencer, and amongst the more interesting male portraits were those of Dr. Johnson (sadly damaged), Burke, Warren Hastings, David Garrick, Sheridan, Lord Anson, Sir George Beaumont, Bartolozzi, and Baretti. The well-rewarded activity of Sir Coutts Lindsay in collecting "Sir Joshuas" did not prevent the Royal Academy from obtaining some twenty fine examples of the master for their Winter Exhibition. Amongst these were two of his masterpieces belonging to the Marquis of Lansdowne—the celebrated portrait of the beautiful and shortlived Miss Morris as "Hope Nursing Love," and "Mrs. Sheridan as St. Cecilia," lovely even in its decay. The portraits of C. J. Fox (as a young man), Gibbon, and Lord Sheffield, were also of unusual interest. By Hogarth were two little-known conversation pieces, the best of which, containing portraits of the Strode family, has since been presented to the National Gallery by the executors of the late Rev. Wm. Finch. The landscapes included one exceptionally fine specimen of Richard Wilson—"The Lake of Nemi"—lent by Mr. Orrock. Of the Dutch School the artist who was the best represented was Van de Capelle, but, as usual, this section was very strong, and contained fine specimens of Franz Hals, Metzn, Terburg, Ostade, &c., with a grand large sea piece by Ruysdael, belonging to the Marquis of Lansdowne. Mr. Weld-Blundell sent a fine little "Virgin and Child," by Van Eyck, and the Marquis of Lansdowne a well-preserved and interesting "Banker," wrongly ascribed to Holbein, and evidently Flemish in origin. The examples of Italian painters were generally more interesting than important. One room was devoted to the works of the late Paul Falconer Poole, R.A., an artist of much poetic feeling whose imagination was sometimes inspired with a noble vision, as in his masterpiece called "A Lion in the Path." His historical pieces were, however, of a stagey character, and his sentiment was often forced and weak. These defects, combined with an

imperfect sense of colour and want of skill in drawing, stand in the way of his posthumous reputation. The only other Winter Exhibition which need be noticed here was that of the Royal Society of Water-colours, at which the place of honour was rightly given to Mr. Albert Goodwin's glowing view of "Whitby" at sunset A beautifully-finished little picture by Mr. Alma Tadema, representing a "Declaration" of love in ancient Italy, some vivid sketches in Holland by Miss Clara Montalba, two chalk heads by Mr. Poynter, a few highly elaborated and disagreeable landscapes by Mr. Holman Hunt, and half a dozen painstaking architectural studies by Mr. Ruskin, were among the most striking features of a very pleasant, but not very important, Exhibition.

The general verdict on the "Academy" for 1884 was that the paintings were singularly poor and the sculpture unusually good. On the latter point there can be little doubt, as to the former there is more room for dispute. What made the general disappointment certain and reasonable was the failure of many prominent members of the Academy to produce successful pictures, and the persistence of others in filling large spaces with bad and uninteresting work. With the exception of Mr. Herbert, the chief offenders in the latter respect were Mr. T. S. Cooper and Mr. F. Goodall. The former sent a cattle piece of large dimensions and very bad quality, and the latter a "Flight into Egypt," still larger and very empty. Mr. Cooper has had his day, and may perhaps with Mr. Herbert be pardoned for not perceiving a fact which is patent to everybody else, but for Mr. Goodall, who can still paint well, there is less excuse for such an error in judgment. Other artists who failed altogether to reach their expected level were Mr. Pettie, Mr. Briton Riviere, and Mr. Storey. The action of the Academicians in purchasing with the funds of the Chantrey bequest a large and inferior work by Mr. Pettie, called "The Vigil," was much and severely criticised. Signs either of carelessness or of fading power were also perceptible in the work of Mr. Millais. His most important picture was called "An Idyll," and showed us a young fifer dressed in a gay red and yellow uniform of the last century, displaying his skill to the evident wonder and admiration of three pretty little country girls. Though in parts powerfully painted this picture was ill composed and unequal in execution. The same artist's profile painting of Mr. Henry Irving was an unmistakable likeness, and showed us the gentleman as well as the actor, but it was almost as smooth and uninteresting as an oleo-

graph. Another fine artist who may be said to have failed, though from no want of care and from no decrease of power, was the President. Sir Frederick Leighton probably never expended more thought and skill upon a picture, and his large and highly finished "Cymon and Iphigenia" was beautiful enough, and the sleeping figures of her attendants were (taken separately) finely studied, but Cymon was uninteresting and too refined for his part, the landscape was unnatural, and the lighting and colouring of the whole composition were artificial in the extreme. There was, in short, too much art and too little nature in the picture, so that while it was impossible not to admire the subtle draughtsmanship and elegant disposition of the figures and the drapery the work failed to produce illusion, and left the spectator still cold and critical. Nevertheless the work was one fitted to sustain, if it did not increase, the reputation of the artist and his brother Academicians. In the latter direction he was ably seconded by Mr. Hook, Mr. Orchardson, Mr. Ouless, Mr. Peter Graham, and Mr. Alma Tadema, while Mr. Poynter, Mr. Hodgson, Mr. Marks, Mr. Leslie, and Mr. Yeames contributed creditable, if unimportant, examples of their skill. Mr. Hook, who like nature is always the same but ever fresh, sent three of his well-known scenes of live blue sea and sparkling shore full of air and rich in colour. One of our few "born artists," and in his ripe age yet unrivalled by any of his many imitators, he is a fine example of a purely English painter. Mr. Peter Graham is another instance that in order to fulfil all the best requirements of art there is no need for a landscape painter to seek either manner or material outside his own country. This artist had one specially fine landscape showing the "Dawn" rising beyond the mountains which encircle a lake, and dispelling the mists which roll above a village on its shore. In front was a large boat with its strong reflection in the water rendered with great power. His other picture, called "Sea-mist," though not so original in subject, was also a good specimen of the master. For figure subjects the palm of the exhibition was generally awarded to Mr. Orchardson, who has seldom painted a picture more luminous than his "Mariage de Convenance," in which at either end of a long table in a splendid room an old man and his young wife sat in unhappy state. The tale was told obviously enough, and the expressions of the ill-mated couple and the old butler were excellent, but the triumph of the picture was mainly technical. As usual with the artist a general tone of yellow prevailed, in

this case deepened to a rich amber by the fine treatment of the artificial light. The mastery of the artist was specially exhibited by the manner in which the various adornments of the table (the fruit, flowers, and the plate) were rendered under the illumination of the hanging lamp. In portrait painting Mr. Ouless easily distanced his rivals Mr. Frank Holl and Mr. Herkomer. The heavy mannerism of the former and the superficial cleverness of the latter, though combined with many good qualities, are no match for the intellectual insight, the skilful but thorough workmanship, and the fine colour of Mr. Ouless, whose portraits, "Mr. Samuel Morley," "Mr. Henry Whiting," "Mr. Bancroft," and "Mr. Hodgson," were all admirable, and the last a masterpiece.

Judged by size, Mr. Alma Tadema's picture of the Emperor Hadrian's visit to a Romano-British Pottery, was one of the most important he has painted, and he has seldom drawn the figures more successfully on a large scale, but the composition was awkward. Prominence was given to the least important personages, and a "peep-show" view of the potters at work in a long room at the bottom of the picture at once arrested and held the attention. In execution it showed all the artist's dexterity, especially in the painting of a heavy cluster of ivy and some onions in a niche in the wall. Other well-known painters of figure subjects who sustained their reputations were Mr. Boughton, who sent a vigorously drawn and charmingly coloured single figure of a Dutch field handmaiden, and Mr. Albert Moore, who exhibited a composition of unusual size, called "Reading Aloud," in which his fine sense of form and colour was displayed to the utmost. On the other hand, Mr. Long, who seems to have been spoilt by his popularity, sent two figures of "Judith" and "Thisbe," uninteresting additions to his populous gallery of sentimental beauty. It must, however, be mentioned, in justice to this painter, that his energies had been for a long time absorbed in the execution of an enormous picture of the Holy Family passing in their "flight" through an Egyptian city at the time of a grand procession in honour of Isis. This considerable achievement was on view in a gallery in Bond Street throughout the year, and was well calculated to attract by the gorgeousness of its pageant, the striking character of its subject, and its plentiful and ingenious incident.

But if, with a few exceptions, the most strenuous efforts of the painters of great reputation failed of their mark, two of the

younger generation achieved notable success. Mr. Seymour Lucas, in "After Culloden," represented some English soldiers entering a smithy in search of a rebel whose means of retreat was indicated by a stair in the corner. But between it and the soldiers were interspersed the anvil upon which some sturdy smiths were forging a horseshoe, and regarding the intruders in a spirit the reverse of conciliatory. It was throughout an accomplished and solid piece of work, worthy of the best traditions of the English school, and its purchase with the funds of the Chantrey Bequest was generally approved. Mr. J. Waterhouse's "Consulting the Oracle," despite its want of space and overcolouring, was also an effective picture, showing the artist's gift of design and an unsuspected power of imagination. The expression of the sibyl and the contrast of her fine vivid face with that of the hideous mummy to which she was applying her ear, were of considerable force. Although Mr. Caton Woodville's "Guards at Tel-el-Kebir" did not leave such a strong impression as these two pictures, it deserves to be mentioned with them for its skill and sincerity, and as being the best battle-piece of the year.

Of the painters of Venetian life, with Van Haanen at their head, the Exhibition, as usual of late years, contained many specimens. Van Haanen himself sent one of his dexterous interiors of a dressmaker's workshop, rather confused in composition, but exceedingly masterly. There were also two very clever and humorous, but not altogether refined examples of De Blaas. To Van Haanen's English followers is now added Mr. Luke Fildes, who by two or three extremely clever and brilliantly coloured pictures, on a large scale, produced a considerable effect. Their colour was, however, more gay than harmonious, and their merit was mainly that of *tours de force*. In this respect they differed greatly from some admirable little studies of Venetian life and Venetian sunlight by Mr. Woods, who seems to be gradually mellowing into a masterly painter and a fine colourist, dropping those adopted tricks and immature crudities which impaired the value of his always interesting and effective work.

The pictures by the more clever of the younger English artists betrayed a strong foreign influence, especially of the French school. This was shown in a certain sureness and directness of execution, a greater regard for tone and correctness in drawing, but it was also noticeable in poverty of subject, in low and imperfect colour, and in a desire to render some of the hitherto

avoided and most disagreeable atmospheric effects, such as blinding sunlight or sunlight so diffused as to have the earth almost shadeless. It is difficult not to thank and to reprobate in the same breath the example of M. Bastien Lepage, which has developed so strongly and so unpleasantly the talents of such clever and conscientious painters as Mr. J. Reid and Mr. Clausen. The figures in the former's "An Ugly Customer" (an old fisherman showing a big and pugnacious lobster to some nice little girls), were pleasant and forcible, and those of the latter's "Labourers after Dinner," were forcible if not pleasant, but Mr. Reid's were unrelieved against his sea and sky, and Mr. Clausen's were unsupported by his unsubstantial earth. Nevertheless what may be called the French contingent of the young English school number among them men of trained skill and much promise. Despite his present tendency to reduce nature to French gray and French green, much may be expected of Mr. Blandford Fletcher, whose pictures of French peasant life ("Compulsory Education" and "A Leader of Public Opinion") showed much observation of character, and the humours of young and old. Mr. W. H. Bartlett is a better known artist of much power; both he and Mr. F. Bramley had works which may be mentioned "in this connection," and perhaps also Mr. Everton Sainsbury, who made an advance on his previous essays. Other young painters who seemed to have derived advantage from training which is foreign, at least in part, are Mr. Jacomb-Hood and Mr. Philip Steer. The former's "La Cocarde Tricolore," and the latter's "Fantaisie," a charming girl's head, were notable in a crowd of inferior work.

Much of the pleasure of the Exhibition consisted in the purely English landscapes. For those who like them, Mr. W. B. Davis, Mr. Vicat Cole, and Mr. Leader displayed their usual skill, but more freshly inspired work was sent by Messrs. F. Walton, Alfred Parsons, Leslie Thompson, Adrian Stokes, T. Hope McLachlan, Flitcroft Fletcher, Arthur Tomson, H. Bannerman, Thurlow Hunt, Horace Gilbert, J. C. Noble, H. W. Heath-Wilson, and others too numerous to mention.

Of sea paintings, besides those of Mr. Hook and Mr. Peter Graham, may be mentioned some vivid work by Mr. Colin Hunter, a picture by Mr. Brett of "Macleod's Maidens—Isle of Skye," as hard and patient in handling as usual, but more striking in subject.

Although of art which appeals to the higher emotions there

was little, we must not omit to notice the "St. Peter denying Christ," by Mr. W. Mouat Loudan, a work of great promise, not less for its good draughtsmanship than for its noble severity of design. Another work of fine feeling and execution was Mr. S. Melton Fisher's "Abide thou with me," &c.

Nothing, perhaps, was more characteristic of this year's "Academy" than the quantity and good quality of the pictures by ladies. Mrs. Alma Tadema, Mrs. Waller, Miss Jessie Hayllar, Miss Lizzie Reid, are only four out of many who distinguished themselves, and Miss Alice Havers' "Haunted Lake," called in the catalogue "An Autumn Load," was one of the most charming pictures in the gallery.

Other memorable pictures of the year were Mrs. E. J. Gregory's pleasant and masterly scene in a back water of the Thames, with swans enraged at the invasion of their haunt by a "houseboat" and its pretty occupants, and Mr. J. D. Linton's "Declaration of War," which marked the completion of a long and laborious task—the illustration, by a series of six large pictures, of the career of a soldier in the sixteenth century. This, the last in execution, was the first in subject, and was called "The Declaration of War."

On the whole, though the pictures of the year showed a tendency among the strongest young painters to the unsentimental record of current life, this was accompanied by strenuous endeavours towards technical mastery, and a discontent with convention and untruth, whether of feeling or execution, and amongst the enormous band there are to be found not a few who both think and feel, and thus afford a guarantee that the lamp of poetical and imaginative art will not be altogether extinguished by the present tide of rude and crude materialism.

Amongst the English sculptors none appeared to greater advantage than Mr. Hamo Thornycroft, who succeeded in a new and difficult branch of the art, the statuesque representation of a rustic figure. His "Mower" was fine and simple, with a touch of sentiment akin to that of the late Frederick Walker. Mr. Alfred Gilbert's statuette of "Icarus" was also remarkable for its grace and imagination, and the reputation of this sculptor was further increased by a bold head in bronze. A group of Jacob and Isaac, "Bless me, even me also, O my father," by Mr. E. Roscoe Mullins, was a vigorous and fresh conception, well wrought out, and Mr. Brock increased his reputation by his fine statue of "Sir Richard Temple." Another work full of good

augury for the future was Mr. Henry Bates' prize bas-relief of "Socrates Teaching." Free in gesture and careful in modelling, it united the claims of art and nature in no usual degree. Miss Susan Canton's finely felt statuette of "Buddha," and Mr. Natorp's "Hercules," were also in their several ways works of mark, and statues by Mr. G. A. Lawson and Mr. Onslow Ford strengthened the conviction that new life is at last animating the sculpture of the nineteenth century. A nobly pathetic and finely modelled bronze statuette of "A Child Weeping," by Mr. Arthur Atkinson, must not be omitted from the list of works of the higher class. The portrait sculpture was also very good. It is seldom that such a fine array of busts has been seen; in this branch Mr. Boehm well sustained the reputation of the Royal Academy. In the sculpture of animals, Miss Ellen Chaplin showed her peculiar gift by some admirable groups of cats, and the same lady evinced wider powers in a vigorous little battle group called "Kassassin." The present desire to revive all lost or suspended arts was shown by the Misses Casella, in some clever and pretty wax medallions. Though on the whole the exhibition of sculpture by English artists was one of considerable achievement and more promise none of it equalled in fineness of line and subtlety of modelling a bronze figure by the French sculptor M. Rodin, called "L'Âge d'Airain."

The Grosvenor Gallery was as full of interest as usual, but the interest was mainly of the same character as that of the Academy. It is true there were some of Sir Coutts Lindsay's special contributors, including such weak followers of Mr. Burne Jones as Mr. Spencer Stanhope and Mr. Strudwick, whose affectations ave ceased to attract. M. Legers was also there, both as a painter and a sculptor, but with the exception of one fine head in oils, some grotesque masks, and a beautiful bust of a lady, he was scarcely in force. Mr. Whistler also was there, with a portrait of Lady Archibald Campbell, a slight but exquisite work of art, but with the exception of Mr. Burne Jones, most of the notable work was by artists whose skill was also to be seen at the Academy. By Mr. Burne Jones was one of the most memorable of the year's pictures, representing King Cophetua in dark armour, holding a jewelled crown, and gazing with reverent love on the slender figure of the beggar maid, who sits enthroned above him, in simple and scanty grey raiment. She with wide grey eyes looks out of the picture, with an expression of timid and pathetic wonder. In depth and richness of colour Mr. Jones has painted

nothing equal to this picture for some years. A charming figure of a wood nymph, in a green robe, and surrounded with tree-boughs, was Mr. Jones's other contribution. Two of the Academicians were to be seen at greater advantage at the Grosvenor than at the Academy; these were Mr. Millais and Mr. Alma Tadema. The first sent two pictures of the same lady, one as Miss Nina Lehmann, the child of 1868, the other as Lady Campbell, the wife of 1884; the latter bore comparison with the artist's earlier work better than most of his pictures of this year would have done, but his portrait of the Marquis of Lorne, also here, was free and fine. Mr. Tadema has seldom painted anything better than his portraits of the sculptor Amendola, and the etcher Lowenstam. Some striking portraits by Mr. Richmond, including a specially beautiful one of Miss Dora Mirlees, were a feature of the collection. Mr. Herkomer also sent hither the best of his large harvest of portraits. A fine opalescent scene of "Coral Fishing in the Gulf of Salerno," was remarkable for its rejection from an Academy crowded with worse work. At the Grosvenor its merit received due recognition. It is not owing to lack of merit in other pictures that we forbear to mention them, for the collection was full of good work, but the recital of it all would be too lengthy. Amongst the sculpture was a natural and elegant statuette by Hamo Thornycroft, of a lady in modern evening dress, seated on a music stool, with "A Sonata of Beethoven" on her knees; and an exceedingly repulsive life-size "Dryope," by Mr. R. Barrett Browning, in bronze, which appears to have been modelled from the lowest and coarsest type of the Italian peasantry.

The Exhibition of the Royal Society of Painters in Water Colours was lightened and brightened by the work of recently elected members and associates, and two of their latest acquisitions, Mr. Glindoni and Miss Mary E. Foster, thoroughly justified their selection, but there were few figure drawings of striking mark except those of Mr. C. Gregory. By well known favourites there were of course a large number of beautiful drawings, and Messrs. Albert Goodwin, Alfred Hunt, Francis Powell, Herbert Marshall, are only a few of a long list whose successes would deserve to be detailed in a less summary view. It was an exhibition of a high average and some promise, but there was more of the latter at the large open exhibition of the Institute. Of the thousand and eighty-three drawings in this mammoth exhibition, the large majority were, as might be expected, of

little interest, but there was a marked advance in figure painting. It is doubtful whether any picture of the year in oils or water-colours exceeded in poetic conception and powerful execution Mr. Walter Langley's "Scene in a Cornish Fishing Village," where the folk are excited with the news of a disaster, and an old woman is administering such comfort as she may to a young widow in the first bewilderment of grief. Another notable drawing was Mr. Frank Dadd's "Pigtails and Powder," the best of several drawings by this artist, which showed a distinct advance in technique. A portrait of the President, Mr. J. D. Linton, by Mr. T. Walter Wilson, also showed much progress, and Mr. E. A. Abbey, the graceful American illustrator of Herrick, proved that with a little more mastery of his materials he will also become a valuable addition to the Institute's already long list of clever depictors of domestic incident and figures. To this has now been added the name of Mr. H. R. S. Steer, a painter who won his spurs in this exhibition with three little bits of *genre*, full of character and of pure quality. Nothing can be said here of the work of the other members of the Institute, except that they well sustained their reputation, and that Mr. Thomas Collier sent one of his very finest landscapes.

Of other annual exhibitions a few words will suffice. Those of the Society of British Artists were perhaps above the average and those of the Dudley below it, but that is saying but little either way. A new candidate for favour appeared in Conduit Street, calling itself the Nineteenth Century Art Society, and promised to be a pleasant if not a very necessary addition to the Annuals. Of exhibitions of the more commercial class, those at Messrs. Tooth's and Messrs. Maclean's were full of interest, but they did not eclipse the old favourite "French Gallery" of the Messrs. Wallis. The most remarkable of the younger foreign painters introduced this year to the British public in these exhibitions was P. Joanowitz (a pupil of Müller), whose picture of a young Servian taking a lesson in fencing was an astonishing production for a man of two and twenty. At Mr. Mendoza's in King Street, St. James, some clever pictures by Favretto, Paoletti, F. Vinea, and other Italian artists not often represented elsewhere, were exhibited, and at the Dudley Gallery a body of French artists, Gervex, Roll, the late De Niltés, Barillot, Damoye, and others repeated their experiment of last year. The most important picture in the gathering was Léon Bonnat's grand portrait of "Victor Hugo."

For those who are sensitive to rare and chance effects of colour and care for morsels of dexterous painting conveying just as much of a scene (and no more) as will recall some happy combination of form, or some accidental harmony of hues which please the purely pictorial sense, Mr. Whistler's exhibition was a treat—perhaps the greatest treat he has yet given us. It was held at Messrs. Dowdeswell's in Bond Street, and termed characteristically "Notes," "Harmonies," "Nocturnes," it being the fashion of Mr. Whistler to insist on the analogy between painting and music. To him "Violet and Red" or "Blue and Grey—Unloading" seemed sufficient titles for his pictures, but they were nevertheless very various in subject. Night scenes in streets, sands by twilight, and landscapes in broad sun, alternated with bits of calm and angry sea and interiors where furniture and dress and figure combined to produce some beautiful or strange impression. Whether this artist be right or wrong in his conception of art, there is no doubt that as a painter he excels in conveying delicate sensations of light and colour which are fresh and delightful to those who can feel and appreciate the intention of the artist. One of the most admired of the drawings in water-colour represents the window of an old sweet shop in Chelsea. Another subject of equal insignificance but raised by its treatment to a high level of beauty gave us the fronts of two or three old gabled houses in a street, remarkable for choice colour and charming arrangement of line. Most of the works were in oil and tiny in size, but there was one of a girl in blue of larger proportions painted in a broad and masterly manner, and there were a few water-colours and pastels.

Amongst the numerous exhibitions of the Fine Art Society was a collection of the works in oil and water-colours of Mr. Alfred W. Hunt one of the most refined and poetical of the landscape painters of the day. Refinement and poetry are however not the qualities now in vogue, and the artist who can produce the most telling effect with the fewest strokes of the brush is preferred to more careful and conscientious workers. It is mainly to the desire to see "the fist" of the painter in his work that the rejection of Mr. Hunt as an Associate in favour of Mr. Colin Hunter may be attributed. There can be no doubt of the force and skill of this young Scotch painter of marine subjects, but in variety and depth of feeling he is so manifestly inferior to Mr. Hunt that it would seem as if the more spiritual and intellectual qualities of a landscape artist counted for

little just at present. The painter of "Whitby—Evening" and "Summer Days for Me," should have been an Associate years ago, and probably would have been if he had not first attained distinction as a water-colour painter. The same society also collected the works of another true artist, Mr. Samuel Cousins, the well-known engraver in mezzotint. His long career was illustrated by proof impressions of his plates from the days of Sir Thomas Lawrence to those of Millais. Mr. Cousins was a pupil of S. W. Reynolds, and if not so rich and powerful as early masters in the "black" process, equalled if he did not excel them in refinement and in sympathy with the artists whose works he rendered. How admirably he interpreted Landseer, even to his peculiar handling, is too well known to need mention, and his engravings after Sir Joshua Reynolds, if not equal to the masterpieces of M'Ardell, yet hold their own. One of the most interesting features of the exhibition were some portraits drawn by himself when a boy. A collection of the drawings by Mr. G. Du Maurier also proved a very attractive exhibition. Notwithstanding the faithful reproductions of these admirable scenes from modern life which delight the readers of Punch, the public were glad to see the originals, for they were on a larger scale than the engravings in the popular periodical, and showed many a delicacy and humour of this gentle Hogarth of the nineteenth century which the wood-cutter had not been able to preserve. Other exhibitions of the Fine Art Society were drawings by Mr. W. L. Wyllie and "A hundred paintings and drawings by a hundred artists," none of which need a special chronicle.

COSMO MONKHOUSE.

SCIENCE OF THE YEAR

Astronomy.

The Sun.—M. Trouvelot has lately announced that he ha observed as far back as 1878, at Cambridge, Mass., that certain faculæ in the sun's spots cast well-defined shadows, and this has been subsequently corroborated by other observers. On one occasion, owing to the position of the spot near the limb and the sphericity of the sun and the height of the facula above the spot, it was possible to look *under* the faculæ to the cast of the spot, and to see part of the penumbra beneath it. M. Trouvelot says that "on this part of the penumbra an extraordinary appearance was noticed, which resembled so closely a shadow cast by the overhanging faculous mass, that it was impossible to admit any other explanation, the matter appeared so plain and so impressed the mind."

From these observations M. Trouvelot concludes that the light seen in these faculæ resides almost entirely on the surface, and is perhaps only produced in presence of the coronal atmosphere.

Dr. J. Hilfiker, Assistant Astronomer at the Observatory at Neuchâtel, has published a pamphlet in which he discusses the various values which have from time to time been obtained of the dimensions of the sun's diameter. These values have differed not only from year to year but even from month to month. The yearly variations Dr. Hilfiker concludes are true, *i.e.*, the observations made are correct and not due to any error either in the instruments or the observers, and he finds that the epoch of greatest diameter coincides with the epoch of minimum sunspots. The variations at different seasons of the year may be due to an ellipticity in the sun's figure, but on this point Dr. Hilfiker does not offer any definite conclusions.

The temperature of the sun has been studied by M. Hirn, who attempts to calculate the heat of the interior by determining the rate of expansion of a highly compressed gas. It is probable that there exists below the surface of the sun matter in the gaseous form very strongly heated and under tremendous pressure. When this gas escapes into a higher region where the pressure is greatly reduced the speed of projection can be calculated. In the case of hydrogen M. Hirn finds the velocity with which the gas moves by noting the height above the sun's surface which it attains, and the number of seconds occupied in

reaching that height, and by calculating the speed which an equal extent of fall due to gravity would cause at the sun's surface. These two methods yield a result of 200,000 metres per second, from which the temperature of the interior is determined to be upwards of 2,000,000° Centigrade. The temperature of the photosphere on the other hand is put down by M. Hirn as not more than 100,000°, since he considers it certain that the solar light is largely emitted from solid particles which would not be able to exist at higher temperatures except in the state of gas.

The Solar Eclipse of 1883.—The observations made by the French Expedition, which were communicated to the French Academy by M. Janssen, contained several important points which were not alluded to by the English or American observers. Thus M. Janssen came to the conclusion, from his own spectroscopic observations, that the coronal atmosphere must contain an abundance of matter in the state of solid particles, since otherwise the large quantity of *reflected* light which he noticed cannot be accounted for. The photographic work was especially successful, the plates showing an extension of the corona far beyond what is visible either by the eye or through a telescope, while the forms of the corona remained quite unchanged during the whole period of the total eclipse. M. Tacchini also recognised in the spectrum of part of the corona two bands, one in the green and the other in the yellow, which are well known as characteristic features in the spectra of comets. This if established by other observers will be a most important discovery, and tend to show a community of origin between the comets and the coronal matter. The amount of light given by the corona was measured by careful photometric means, and found to be greater than that of the full moon. This is the first time that a precise determination of the luminous intensity of the corona has been obtained.

The Planets. Jupiter.—The great red spot on Jupiter, first noticed in 1878, has been watched during the past year with some curious and unexpected results. Thus from observations made at the Dearborn Observatory, Chicago, by Professor Hough, it appears that its rotation period is slowly increasing, being now four seconds faster than in 1879. In addition, the spot has drifted south through a distance of half a second of arc, a quantity which, though seemingly minute, is equal to 1,200 miles on the surface of the planet. The great equatorial belt has also moved southwards till its edge is nearly coincident

with the middle of the spot, yet the two objects remain quite distinct, the edge of the belt being apparently indented, forming a depression in the shape of the red spot, but separated from it by about 1″ of arc. The satellites of Jupiter have also presented the unusual phenomena of dark transits, which have been carefully noted by competent observers.

Mars.—M. Trouvelot has announced the near completion of a series of observations which he has been making for the last nine years of the planet Mars. He has accumulated 415 careful drawings of the planet, and has a valuable supply of notes on the phenomena of its surface and atmosphere. He hopes when the snows of the North Polar Circle have diminished to be able to publish a map of Mars of a far more complete character than has previously been obtained. M. Trouvelot remarks that the northern hemisphere is much richer in grey spots than the southern, and that these grey spots change from time to time in a manner which suggests to him that they may be patches of vegetation undergoing the changes of the seasons. The period of rotation of the planet has been re-determined by Mr. Denning, who gives the time of a rotation as 24 h. 37 m. 22·626 s.

Venus.—The results of the French Transit of Venus Expedition show for this planet a flattening at the poles of $\frac{1}{303}$, which is not far different from that possessed by the earth. Certain dark and bright spots which have been noticed on Venus are set down as due in the former case to gigantic depressions on her surface, and in the latter to masses of cloud or ice. The fact that these spots remain nearly stationary, so that the rotation of the planet does not affect them to any noticeable extent, appears to show that the pole of the planet passes through them, but in both cases the size of the objects would seem to be inconsistent with these theories.

Minor Planets.—Herr Palisa discovered at Vienna on November 28, No. 235 (Carolina); the elements of this planet have been computed by Professor Frisby, from observations made at Washington Naval Observatory by Commander W. T. Simpson. No. 236 was discovered on April 26 by Herr Palisa at Vienna. Its brightness is that of a star of the 12th magnitude. It has already been dignified by the name of Honoria. On June 27, the same observer discovered another (No. 237) of the 12th magnitude, which he has named Cælestina. Dr. Knorre of Berlin, while searching for No. 233, was rewarded by the

discovery of No. 238, on July 1st. With respect to these minor planets, Dr. Luther has drawn attention to the circumstance that no fewer than twenty-eight of the whole number have been observed during one apparition only. The last nine discovered are with one exception all included in this number. Herr Palisa's forty-third discovery was made on August 18th, at Vienna, when No. 239 was found. It is of the 13th magnitude. Herr Palisa has now surpassed by one the other great discoverer of minor planets—Professor Peters, who is credited with forty-two of these apparently inexhaustible bodies. No. 240, of the 12th magnitude, was discovered on August 27th by M. Borrelly at Marseilles; No. 241 of the 11th magnitude by Dr. Luther at Dusseldorf on September 12th; and No. 242 of the 13th magnitude by Herr Palisa at Vienna, on September 22nd.

Universal First Meridian.—The unification of longitude and time, which was the object of the appointment of the Geodetic Congress, has been practically obtained. The Congress met on two different occasions, first at Rome and then at Washington. The great majority of the delegates were in favour of adopting the meridian of Greenwich as an initial first meridian, owing to its present widely extended use and to the large number of maps and charts in which it is employed. The railway companies of the United States and Canada have the honour of being the first to adopt a local time standard based on Greenwich mean time, and the action of the railways has been followed by almost every city and town throughout North America. The local time varies by complete hours from that of Greenwich, the time adopted in the Eastern States—known as "Eastern" time—being exactly 5 hours slower than Greenwich mean time. In the Central States the time is 6 hours behind Greenwich, in the Mountain States 7 hours, and in the Pacific States 8 hours slower than that in this country. This most important change came into use on November 18th, 1883, and was at once adopted over nearly 120,000 miles of railroad. The divisions between any two time regions are of course about 15° apart, but are varied to some extent for the sake of making the break of time occur at places where the inconvenience would be the least felt. In addition to the adoption of this standard time in America, the Congress have agreed to recommend for astronomical purposes an international time based on the Greenwich first meridian, and counted from 0 to 24 hours, starting from midnight.

Secular Acceleration of the Moon's Mean Motion.—The dif-

ferences between the observed and the calculated theoretical values of the moon's mean motion have long been a source of dissatisfaction to astronomers. Professor Oppolzer has endeavoured to account for this difference by the influence of cosmic dust, which he considers would affect the moon's motion in three ways :—1. The mass of the earth and moon would be gradually increased by the deposition on each of them of this cosmic dust. 2. The tangential velocity of the moon would be diminished by a certain portion of the falling dust. 3. The velocity of rotation of the earth would be also affected by the same cause. Professor Oppolzer computes that a deposition of less than three millimetres of dust on the earth's surface in the course of a century would be sufficient to account for the observed discrepancies between theory and observation. Professor Oppolzer also incidentally arrives at the conclusion that the earth moves in space through a medium nearly four billion times lighter than air.

Similarly Professor C. A. Young admits that there remain serious discrepancies in the observations of the moon's motion, which can only be explained by assuming either that the lunar theory is mathematically incomplete, and fails to represent the action of the earth and sun and other bodies on her movements due to gravitation, or that some unknown force other than gravitation is acting on her, or that the rotation of the earth is more or less irregular and so affects the time reckoning. Whatever may be the cause, the fact still remains to be satisfactorily accounted for that the mean motion of the moon during the past eighty years is really less than during the preceding eighty. In connection with this subject it may be added that M. Nyren at the Pulkowa Observatory has apparently established that the position of the earth's axis is slowly varying, so as to diminish the latitude of that observatory at the rate of one second of a degree per century. These results, which were conducted with unusual care, have not yet been confirmed by observations elsewhere.

Eclipse of the Moon.—On October 4th the moon suffered a total eclipse. The duration of this eclipse was, owing to the relative position of the earth and moon with respect to the sun, somewhat longer than usual, and some sixty observatories were engaged in the work of observation. It is expected that the results will enable a more exact value of the moon's diameter to be obtained. The weather over the great part of the United

Kingdom was favourable, and careful measurements were therefore readily secured.

New Comets.—The first comet of the present year was discovered on January 7th by a young amateur observer named Ross, at Elsternwick, Victoria. Its position and orbit were computed by Mr. J. Tebbutt of the Windsor Observatory, New South Wales. When observed by him it had already become so faint as to be invisible to the naked eye, and was moving away from both the earth and the sun. The observations were made during the latter part of January, and by the middle of February it had passed out of view. The nucleus appeared as a fine circular nebulosity with central condensation. A faint tail was also visible. The spectrum showed the three hydrocarbon bands, faint and diffused at the edges. The general appearance of the comet remained the same on subsequent observation.

A new comet was discovered by Mr. E. E. Barnard of Nashville, Tennessee, on July 16th. It is described as possessing no tail, but decided central condensation. Other observations have been obtained of it at Washington and Algiers. Its motion is reported as being slow, so that it is likely to afford time for repeated observations. Mr. Prince describes it as being entirely devoid of nucleus when seen by him in September last, and it has also been under observation by Mr. Common at Ealing.

A small comet was also announced by Professor Krüger, as discovered at Melbourne on January 12th, with a rapid motion towards the south-east.

Comet Pons-Brooks.—The comet, the discovery of which by Mr. Brooks was noted in last year's "Companion," turns out to be the Pons Comet, discovered in the year 1812, and which was not expected to return till September, 1884, but MM. Schulhof and Bossert, who have computed an ephemeris for it, have found that there was an uncertainty in the time of its revolution period of at least five years. The spectrum as examined by Konkoly showed three bright bands of different lengths and brilliancy, the central one being the finest of the three. The comet varied in brightness from day to day, increasing from the 10th to the 7th magnitude, and again declining to the 12th magnitude in the space of a single month. As stated last year, it possessed at first a well-defined nucleus, and no tail, but traces of this usual appendage were noticed by later observers. During the present year its brightness continued to increase up to the middle of January, and then again diminished till at the end of February

it had relapsed to its original magnitude. The appearance of the comet also varied, having at times a faint nebulous look without any trace of a bright nucleus, and then changing to a bright star-like object with only a slight nebulosity surrounding a sharp well-defined nucleus. So sudden and erratic have these changes been, that Mr. Wendell, at Harvard, states that on September 22 it was difficult to believe it was the same object as had been observed on the previous night. Between September 5th and September 26th it varied in diameter from 40″ to 2′ 20″. After the latter date it again declined in size and brilliancy.

On January 13th M. Perrotin noticed that the nucleus was as bright as a star of the 3rd magnitude, as placed in the centre of a disc of a strong reddish-yellow colour, and crossed by two lines of light at an angle of about 40° to each other. These lines were white, and stood out in strong relief against the yellowish disc. The brightest of the two lines was in the same direction as the tail, while the obtuse angles between the intersecting lines enclosed a nearly dark space, forming a striking contrast to the brightness of other parts of the comet. By the next day this extraordinary feature had disappeared, only to return again with slight differences on the 19th. In addition to the ordinary three cometary bands, the violet hydrocarbon band was noticed, and an indication obtained of the presence of sodium.

The last appearance of Comet Pons-Brooks was on June 2nd, when it was noticed by Mr. Atkinson at Nelson, New Zealand.

Geography.

Polar Meteorological Stations.—The American Expedition, under Lieutenant Greely, has, after undergoing the greatest hardships, at last returned. The attempt to relieve this party made by the steamer *Proteus* resulted in failure. The ship was crushed in the ice and sunk, the crew escaping with difficulty to Cape York, when they were rescued by another U.S. steamer. The failure of this attempt led to a new expedition being fitted out under the superintendence of General Hazen, consisting of three ships, the *Alert*, *Thetis*, and *Bear*. The *Alert* was presented to the United States by the English Government; the *Thetis* was selected for them by Mr. Leigh Smith; while the *Bear* was a whaling boat purchased in Newfoundland. The expedition was intrusted to the care of Commander Schley of the U.S. Navy, and set sail at the end of April for Upernavik in

North Greenland, and on the 17th of July two of the vessels, the *Thetis* and *Bear*, arrived at St. John's, Newfoundland, with six survivors of the ill-fated American Polar Expedition, among whom was the commander of the party, Lieutenant Greely. The history of the expedition may be shortly described. The first two winters were passed without more than the usual share of Arctic danger and privation, but as the summer of 1883 brought no signs of a relieving ship, the entire party, consisting of twenty-five persons, left their abode in Discovery Harbour at the beginning of August. This was rendered necessary by the decrease in their stock of provisions. The intention of the party was to reach some of the Danish settlements in Greenland, but failing to do this they were obliged to remain as best they were able on the western side of Cape Sabine near the entrance of Smith Sound. But for the stores which had been left by Sir George Nares in 1882, and by the previous relief expedition, the whole party would have perished from hunger. As it was the ill-fated men were reduced to the severest straits to supply food, and one by one fell victims to hunger and cold, till only seven were left of the original number of twenty-five. On the 16th June the *Bear* arrived at Cape Sabine after a slow and dangerous passage across Melville Bay. The precise spot was indicated by a cairn which had been erected on Brevoort Island in the previous October, and which was discovered by one of the searching parties from the *Thetis*. The unfortunate commander was when found on the verge of death, but is now slowly recovering. Besides the few survivors, the journals and observations were saved, and the results obtained have been, if not commensurate with the sufferings endured by the expedition, yet of very high value. To Lieutenant Lockwood and Sergeant Brainerd, two of its members, belongs the honour of having passed the most northerly point previously attained. These explorers reached an island off the north coast of Greenland in latitude 83° 14′. They found no land to the north of this island so far as they could see. The sea was covered with ice and no polar current could be detected in it. To the north-east a headland was visible to which was given the name of Cape Robert Lincoln. Though no open sea was discovered by these observers, Lieutenant Greely considers that observation made by Dr. Pavy and Sergeant Rice, two more of his comrades, prove almost certainly the existence of at least a partially open Polar sea. The tide in Smith Sound was found to flow from the north, and at Cape Sabine from the

south, while the northern tide was two degrees warmer than the southern, and had a rise of from 8 to 12 feet. Mr. Clement R. Markham has suggested that the high latitude reached by Lieutenant Lockwood and Sergeant Brainerd has been incorrectly stated, owing to these observers having mistaken their locality; but whether this be true or not the American Polar Expedition will always be remarkable for the hardships it has suffered and the heroic manner in which its commander fought against them. Lieutenant Ray of the United States Navy has also corrected many details in the map of the district round Point Barrow, and he discovered a range of hills running in an easterly direction from Cape Lisburne, to which he has given the name of the Meade Mountains. From this range at least two rivers previously unmarked flow into the Polar Sea.

Africa.—The expedition under Mr. Joseph Thomson, sent out by the Royal Geographical Society, has met with the greatest success. Mr. Thomson, after leaving Taveta early in July, 1883, was for nearly a year unable to send any intelligence as to his movements to his friends at Zanzibar, the only news received about him during his absence being a report from a passing caravan at Lake Naivash in the month after his start. Though full details have not yet been published, it is known that after leaving Taveta he again reached Mount Kilimanjaro, estimated to be more than 20,000 feet high. Thence he travelled along the east shore of Lake Nyanza, and from there to Lake M'Baringo, being the first white man to reach its shores. Afterwards he plunged still further inland to Mount Kenia, which he calculates is at least 18,000 feet high, and finally found his way back to the coast without harm, after a journey of about 500 miles through tribes often hostile and ready to resort to violence on the most slender pretext. Nearly all the region which he traversed was previously unknown.

Mr. Thomson was followed by another explorer, Mr. H. H. Johnston, who started for Kilimanjaro with the object of investigating the flora and fauna of that mountain.

Another African traveller has not been so fortunate. Dr. Pogge, after crossing the southern basin of the Congo, fell a victim to fever and died at Loanda in March.

The region between the east coast and the great central lakes has been again explored by Mr. O'Neill, the British Consul at Mozambique. Mr. O'Neill crossed from Mozambique to Lake Shirwa and back, and, besides mapping for the first time the

shores of this lake, discovered two other lakes north of it, from one of which the River Lujenda flows. The district round Lake Nyanza has been further investigated by the Rev. W. P. Johnson, who has discovered a new route between Lake Shirwa and Quillimane. Further north, Dr. Kaiser has revisited Lake Leopold, previously described by Mr. Joseph Thomson. Dr. Kaiser unfortunately died on the shores of this lake, but his map has been forwarded to Berlin, and shows the lake as a narrow strip of water between lofty hills, thus confirming Mr. Thomson's observations. Attempts to penetrate into the Galla and Somali countries are still unsuccessful. M. Revoil, who attempted to work his way inland from Magadoxo, had to return, owing to the hostility of the native tribes, while Dr. Stecker, a former companion of Dr. Rohlfs, has explored part of the country of the Upper Gallas in Southern Abyssinia. This region, lying between the route travelled by Thomson and the border of Abyssinia, still requires elucidation.

Another French traveller, M. Giraud, has attempted to cross the continent by striking the head waters of the Congo from the coast at Zanzibar. Leaving this latter place, he passed between Lakes Nyassa and Tanganyika, and reached Bangweolo in July. There he embarked with eight of his men on the "Luapula," which he descended for some days till he finally reached an impassable cataract. Here he was attacked by the natives, made prisoner, and robbed of all his goods. Escaping from these enemies, he rejoined the remainder of his caravan which he had sent on to Cazembe, but was again plundered of his remaining stores, and was compelled to fly to the Belgian station on Lake Tanganyika, after running considerable risk of dying from hunger. He intends, however, to again make for the Congo, as soon as he has obtained a fresh supply of the necessary stores. On the Lower Congo the rival explorers, Stanley and De Brazza, are chiefly engaged in establishing trading stations, though not neglecting to add to our geographical knowledge of the Congo and its tributaries. While Mr. Stanley has explored the River Aruwimi for upwards of 100 miles and discovered two new lakes, M. de Brazza has cleared up the region between Ogowè and the navigable portion of the Congo. One of his officers, Lieutenant Mizon, has also penetrated from the Ogowè to the Atlantic across country, reaching the coast at Mayumba. Thanks to these and other explorers, the Lower Congo, and in fact Central Africa generally, is

becoming rapidly opened up. Thus three steamers are plying on Lake Tanganyika and two on Lake Nyassa, while more than 100 stations have been founded by English and French religious or commercial enterprise.

Exploration of New Guinea.—The island of New Guinea has during the last two years attracted the attention of several exploring parties, most of which have met with scant success. An expedition fitted out by the *Melbourne Argus*, under the command of Captain Armit, failed even to reach the base of the Owen Stanley mountain range, but was diverted from its direct inland course to a line roughly parallel to the shore, so that after two months' travelling, he had not attained a distance of more than 20 miles from the sea. A rival Melbourne newspaper, the *Age*, equipped another expedition under the leadership of Mr. Morrison. This party took a more direct inland course, but after working its way inland to a distance of 35 miles from Port Moresby, was, while crossing a spur of the Owen Stanley range, attacked by natives and driven back, Mr. Morrison himself being badly wounded. Mr. Chalmers was somewhat more fortunate, having penetrated as much as 40 miles inland, and discovered a large river 140 miles west of Port Moresby, on the banks of which are a tribe of natives reported to be cannibals. When it is considered that the island at Port Moresby has been attacked at almost its narrowest part, it is easily seen that but little progress has yet been made. An expedition under Mr. Wilfred Powell, started with the recommendation of the Royal Geographical Society, came to nothing, through lack of funds; and another, on a less ambitious scale, has now been entrusted to Mr. H. O. Forbes, who is known as the successful explorer of Timor. Mr. Forbes has discarded the Port Moresby route, and will endeavour to penetrate into the interior by a new route from the north-west of the island. To this expedition the Geographical Society has given a grant of 250*l.*

Australia and New Zealand.—The continent of Australia has again been crossed from east to west by Mr. W. Whitfield Mills. Mr. Mills' route lay along the parallel of 28° S. latitude, and extended from Beltana, near Lake Torrens, in South Australia, to the coast of West Australia at Northampton. He started from the former place in June, 1883, with thirty camels and five Afghans as drivers, and finally reached his destination in January of the present year. He attaches the greatest importance to the employment of camels, since the expedition was on

one occasion eleven days without water, and great suffering was caused to the whole party in consequence. Six of the camels died, probably from feeding on some poisonous herbage. Mr. Mills reports that during his journey of 1600 miles he only discovered three water supplies which would be available throughout the year, though there appears to be little doubt that borings would tap the underground springs which must exist over the large cretaceous area in Central Australia. An artesian well which had been sunk at Turkaninna in latitude 30° S. and longitude 138° 25′ E., has yielded an abundant supply. Mr. Mills' route followed almost entirely that of Mr. W. C. Gosse, and has not therefore added much to geographical discovery, except in the direction of making these regions better known, and determining the conditions of successful exploration in the future. Mr. Mills reports a large area of fair pasture land between the Blyth watershed and the Warburton range, and if the theory of Mr. Brown, the Government geologist, be correct, that the underground water supply is furnished by the rainfall of the Queensland and northern mountain ranges, this district may ultimately be rendered an important cattle ranching country.

In other parts of Australia useful exploring work has been done by Mr. G. Forrest, a medallist of the Royal Geographical Society, in the Kimberley district, while Mr. Lindsay has discovered a new river named the Walker, in Arnheim Land, west of the Gulf of Carpentaria, and traced its course for a distance of 40 miles. Both observers have added materially to our knowledge of the topography and economic capabilities of these little-known regions. Another traveller, Mr. C. Winnecke, starting from the Warburton river at the Cowarie Station, and like Mr. Mills, employing camels, has sketched upwards of 4,000 square miles of country as far as the Tarleton range. In the northern part of West Australia the eruption of a volcano has been reported, but no description except that of the natives has been obtained. In this as in other matters connected with the geography of Australia, it is to be hoped that the recent establishment of the Geographical Society of Australasia will lead to the further stimulus of organized and systematic exploration.

In New Zealand some very successful mountaineering has been accomplished by the Rev. W. S. Green, assisted by two Swiss guides from Grindenwald. Mr. Green has ascended the highest summit of the New Zealand Alps, Mount Cook, which he has ascertained rises 12,300 feet above the sea. Mr. Green

describes the ascent as one of extreme difficulty owing to the treacherous state of the weather and the difficulty of obtaining supplies.

Mountaineering in the Himalayas.—Mr. W. W. Graham has, during the summer of 1883, achieved the distinction of having accomplished the highest ascent on record in his mountain climbs in Sikkim and Kumaon, among the lofty peaks of the Himalayas. In the course of little more than six months, Mr. Graham, attended in the spring by a Swiss guide named Imboden, and in the summer and autumn by two other Swiss, Emil Boss and Ulrich Kauffmann, traversed numerous mountain passes varying from 16,000 to 20,000 feet in height, and ascended to the top of peak A_{21} of the Dunagiri range (height 22,516 feet), of Jubonu, 21,300 feet, Kabru, 23,700 feet, and of an unnamed mountain in Nipal, 19,000 feet high. In addition, Mr. Graham and his guide Boss nearly succeeded in reaching the summit of A_{22} (21,000 feet high), when they were stopped by a precipice in the last 1,000 feet, and of Dunagiri, where they attained a height of upwards of 22,700 feet, but were compelled to turn back when less than 500 feet from the summit, owing to a storm of hail and wind which rendered the further ascent impossible. To the peak A_{21} Mr. Graham gives the name of Mount Monal, from the number of snow-pheasants which he saw on it. From the summit of Kabru, Mount Everest was visible 70 miles to the north-west, but both Mr. Graham and Emil Boss agreed that certain peaks still further to the north were much higher than this reputed highest mountain of the world. Another important observation was made by Mr. Graham. He found that neither he nor his guides experienced any inconvenience in breathing, owing to the rarefied atmosphere at a height of 20,000 feet and upwards. The most noticeable effect was an increased fulness of the beating of the heart, but none of them suffered from sickness, headache, or bleeding of the nose, as is occasionally the case at much lower elevations. Mr. Graham thinks that for persons of strong heart and good physique no mountain ascent, however high, would be attended with harmful results, assuming that the natural difficulties of climbing could be overcome. He describes many of the peaks as being quite inaccessible, owing to overhanging cliffs or glaciers, some of the slopes being so steep that no snow will lodge on them. Mr. Graham pays a high tribute to the ability and enthusiasm of his guides, to one of whom, Mr. Emil Boss, the Back prize was awarded by the Council of

the Royal Geographical Society for having, with Mr. Graham, attained the greatest height yet recorded.' The other guide, Kauffmann, was on this occasion taken ill, and had to be left behind.

Central Asia.—The native explorers in the employment of the Indian Survey Department have again done good work in the mountainous regions of Central Asia. One of them known as A— K— has, after a four years' absence, returned to India, having travelled as far as Saitu, in Mongolia. In the course of his wanderings he reached Darchendo in latitude 31°, the most westerly point reached by Captain Gill in 1877, thus connecting his explorations with those of the previous traveller. He has also discovered that the Rivers Sanpoo and Brahmaputra are the same, and that the theory that the former flows into the Irrawaddy is incorrect. The Brahmaputra drains the northern slopes of the Himalayas, then bends round their eastern flanks, and finally flows westward into the Ganges. Other native explorers have penetrated the countries of Kashmir, Nipal, Turkestan, and Thibet, all of them being difficult or impossible for a European, owing to the hostility of their rulers. Mr. McNair has, however, succeeded in reaching Chitral, which is only 200 miles from Peshawur. While the English authorities have been thus working northwards and eastwards, the Russians on their side have been gradually adding to their knowledge of the regions reaching from the Caspian to the Great Wall of China. Colonel Prjevalski started from Khiatka in November, 1883, and crossed the Desert of Gobi during the winter, experiencing a cold below the freezing point of mercury. After reaching Tsaidam he intends to explore the source of the Yang-tze-Kiang, and then move on to Northern Thibet in the direction of Lhasa. The Russian Government has also been engaged in the preparation and examination of schemes for the diversion of the River Oxus into the Caspian. Owing to the gradual diminution in the volume of water in this inland sea, the Government are anxious to find some means to increase the supply, which now is not equal to the immense evaporation. The Oxus formerly flowed into the Caspian, and it is thought that this old connection might be restored. Mr. George Kennan, an American traveller, and Professor Lentz, of the Académie Impériale des Sciences, have both investigated the question.

This year has also seen the practical completion of the primary triangulation for the Survey of India. It still requires extension

to connect it with Siam on the one side and with Ceylon, but within India itself the work is now almost finished.

The Panama Canal.—The great engineering problem of carrying a canal across the isthmus of Panama, a distance of more than 46 miles, gains in interest with each augmentation in the amount of work already done towards the completion of this magnificent scheme of M. de Lesseps. The difficulties to be overcome are enormous, involving a cutting of the unexampled depth of 400 feet and width of 500 feet, and an embankment to divert the course of the River Chagres, which will be 100 yards thick at the top, 147 feet high, and more than 2,000 yards long. The necessity of changing the course of the Chagres is owing to the great fluctuations in the volume of its stream, which would render it dangerous to admit it to the canal. The dyke will be placed at Gamboa, near the watershed. As the Chagres is as large as the Seine the task will be one of great difficulty. According to the latest official returns, the quantity of excavation done each month is rapidly increasing: thus while only 333,000 cubic metres were excavated in November, 1883, nearly double that quantity was being moved in the following March, up to which date more than 4½ millions of cubic metres of excavation had been done. Machines of great power and size are being used, which largely take the place of hand labour, and M. de Lesseps appears to feel no doubt that the whole enterprise will be finished in four years from the present time. Should the scheme be crowned with success, the effect on the commerce of the world and the future of the small Republics in Central America will undoubtedly be immense.

Geology and Palæontology.

Determination of the Age of Strata by their Fossil Remains.—At the recent meeting of the British Association, Mr. W. T. Blanford drew attention to the increasing number of cases in which strata containing fossils specifically identical belong to different geological formations. It used to be considered that the presence of the same fossil species in two beds at different localities was sufficient evidence that these beds were of approximately equal age. Professor Huxley was the first to point out that *homotaxis*, or identity of the fauna or flora of two beds, did not necessarily imply their contemporaneous origin, and this caution has been widely extended by Mr. Blanford. The strata to which he has drawn attention are chiefly of cainozoic and mesozoic rocks,

and the localities which he instances are in Greece, Northern India, and Australia. Thus the Pikermi beds in Greece contain the remains of Miocene land animals, with marine shells of Pliocene age, and belong probably, as far as formation is concerned, to the latter rather than the former epoch. Again, in India Mr. Blanford finds a fauna of Triassic age in rocks overlying strata containing plant remains which are Jurassic in character, whereas Jurassic strata are relatively of later formation than the Triassic. In Australia the Carboniferous and Jurassic flora are intermixed and overlaid by distinctively fresh water Permian species. It thus appears that the determination of the age of strata by its fossil remains alone, especially if these remains are terrestrial rather than marine, is extremely doubtful. Mr. Blanford attaches more importance to the evidence afforded by the marine flora and fauna, because he considers that in all past time the land plants and animals have differed more widely from one another in distant lands than do those which have their habitat in the sea. This is certainly the case at present, and it must also be considered that the present accepted order of geological strata is based rather on the evidence of beds formed in the sea than of those formed in fresh water or on land.

Eruption of Krakatoa.—The gigantic volcanic outburst in the Sunda Straits in August, 1883, brought in its train a series of phenomena of which the magnificent red sunsets seen at the close of the past year were only the most universally remarkable. These sunsets are attributed to the effect of the immense clouds of volcanic dust which were ejected into the air during the eruption. The column of dust and smoke was calculated by two observers at from 17 to 20 miles high, and the air currents acting on the finely divided particles would carry them for immense distances before they finally settled on the earth's surface. The size and shape of the adjacent islands and the configuration of the sea bottom were also profoundly altered, new islands appearing and a permanent decrease of depth of about 10 to 20 fathoms being established in parts of the sea bottom around the centre of activity, while where part of the island of Krakatoa formerly stood there is now sea from 600 to 800 feet deep. The frightful loss of life and property are, of course, well known, while the mere noise of the explosion was heard over an area estimated at more than one-fifteenth of the whole surface of the earth. Immense air waves were also set in motion, which caused considerable damage in localities hundreds of miles distant, and

which affected the barometric readings over the whole surface of the globe.

These air waves have been shown to have passed three times round the earth before their effects became too feeble to be detected by the rise or fall in the barometer. The speed with which these waves travelled naturally varied greatly, but the average was not less than 700 miles per hour. The readings taken at Mauritius were especially interesting. As this island is far removed from any other land, the air waves were not impeded by local obstacles, and General Strachey has estimated that at Mauritius the air wave travelled round the earth from east to west in 24 hours 38 minutes, and from west to east in 35 hours 44 minutes, the difference in rate being due to the prevailing wind.

The collapse of the volcanic peak and its subsidence into the ocean was probably the immediate cause of the powerful sea waves which, after sweeping away more than 30,000 human beings in the Sunda Straits, and rising in places to a height of 60 or 70 feet, were spread over the Indian and Atlantic Ocean, past Ceylon and the Cape of Good Hope, even up to the coast of France. Curiously, no true earthquakes were noticed during the period of activity, all the destruction to life and property being caused by either the sea or air waves. Dr. Verbeek, who was appointed by the Dutch Government to report on the eruption, gives as his opinion that nearly 12 cubic miles of material were ejected by the volcano.

Few eruptions in modern times have been so disastrous in their results to human life, or so widespread and long-enduring in their effects as that which will render the 26th, 27th, and 28th of August, 1883, memorable in the annals of geologic history.

The Essex Earthquake.—On April 22nd the north-eastern parts of Essex were visited by an earthquake which did considerable damage to churches, farm buildings, and cottages over an area reaching from the northern shore of the river Blackwater and six miles northward in the direction of Colchester. In Wivenhoe one observer states that the town looked as if it had been bombarded, so wide-spread was the damage, and Langenhoe Church was so shaken as to be a complete ruin. At Fingrinhoe the chimney stacks were twisted in such a manner as appeared to show that the direction of the shock was from nearly south-west to north-east. The shock was faintly felt in Suffolk, London,

Cambridge, and elsewhere, and even as far as Bristol, Birmingham, and the Isle of Wight. The area chiefly affected is situated on the London clay lying on chalk and Gault clay. Mr. Topley concludes from the nature and extent of the shock that the range of the earthquake is connected with the range of the Palæozoic rocks, while the effects are largely due to the nature and thickness of the newer rocks. As is usual in earthquake shocks, the springs and wells were affected. One spring in West Mersea ceased to flow for a short time, and when its flow recommenced the water was strongly discoloured, while a well in Messrs. Courtauld's brewery at Borking showed an increased depth of water of nearly 20 feet, gradually increasing day by day up to 30 feet. Other earthquakes have occurred at various parts of the globe in more than usual numbers, so that it would seem that a general though slight rearrangement of earth-pressure is taking place over largely separated areas. Greater attention is being given to the registration and investigation of earthquake shocks by means of the seismograph—an instrument which allows the direction, duration, and velocity of any given shock to be determined.

Deep-sea Soundings.—Captain Belknap, of the United States Navy, has been enabled by an improvement devised by himself in the deep-sea sounding apparatus usually employed to determine the depths of various parts of the ocean with an accuracy not previously attainable. Most of these soundings were taken in the Pacific Ocean, and the greatest depth measured by him was 4,655 fathoms, off the coast of Japan, showing at that spot a depth of more than $5\frac{1}{4}$ miles. Soundings taken off the coast at New York have shown the existence of a deep cleft or valley at the bottom of the Atlantic in the line of the Hudson river, and extending more than 100 miles seaward from Sandy Hook. This valley probably represents the river bed of the Hudson at a time when the general level of the Eastern States of the American continent was considerably higher than it is at present.

Ancient Fossil Fish.—Professor E. W. Claypole described at the meeting of the British Association some lately discovered fossil fish remains to which he has given the name *Glyptaspis.* The earliest representatives of the great vertebrate family are the fishes, and fish remains have been discovered in England in the Lower Ludlow beds of the Upper Silurian. Until the present discovery no fish remains had been found in America in strata

older than the carboniferous. Professor Claypole describes the *Glyptaspis* as being larger and slightly different from the allied English form *Pteraspis*. The fossils were found in the variegated shales of Perry County, Pennsylvania, and these shales are referred by Professor Claypole to the Onandaga series of New York, or to an interval between the Upper Wenlock and Lower Ludlow beds of England. This would give these fossils a still older character than the English fish remains, and would carry back the known appearance of vertebrate life to an epoch of still more remote geological time.

Fossil Skull.—A human skull has been found in the "loess" of Podlaba in Prague, which in some of its details bears a striking resemblance to the well-known Neanderthal skull. The Neanderthal skull is remarkable for the presence of high bony ridges over the eyebrows, and the skull now found at Podlaba also possesses these ridges, but less strongly developed. A skull has also been found at Kankakee, Illinois, in company with the tooth of a mastodon, but this skull was unfortunately injured by the workmen who found it. Though no final conclusion can be drawn from a single instance such as this, yet the incident may be held to support the theory that man and the mastodon were contemporaneous in America.

Fossil Reptiles from the Jurassic Strata of America.—Professor O. C. Marsh of Yale College, to whom the discovery of the toothed birds is due, has, by his recent investigations on the fossils of the Jurassic strata of the Rocky Mountains, added still further to our knowledge of intermediate forms between the Aves and the Reptilia. The group of fossil reptiles known as Dinosaurs has long been remarkable for certain curious resemblances to birds which it presents. These resemblances have now been largely increased by the discovery of a peculiar horned reptile, to which he has given the name of Ceratosaurus. In this reptile the bones of the pelvis and the metatarsal bones are co-ossified as in birds, and the vertebræ are plain in front and concave behind. In this shape of the vertebræ the Ceratosaurus resembles the rest of the Dinosaurian family, but the co-ossification of the pelvic bones is peculiar to that subgenus. But to fully appreciate this point it must be remembered that the oldest fossil bird, the Archæopteryx, has the pelvic bones separate, and the metatarsal bones, though co-ossified, marked by deep grooves, so that the oldest bird known was more reptilian in certain characteristics than reptiles of the same geologic epoch. Professor

Marsh has also found that the fossil reptiles found at Stuttgardt, known as Aetosauri, had their bones more pierced with air canals than the flying Pterodactyles, and even more than is the case in some orders of birds. It will thus be seen that the gaps between two of the great divisions of the vertebrate animals are fast being filled up.

Biology.

Egg-laying Mammals.—Australia among its varied forms of life possesses examples, which are not found elsewhere, of the lowest family of the Mammalia, called by zoologists the *Monotremata*. One of these is the ornithorhynchus or duck-mole. This curious animal presents numerous bird-like characteristics. The jaws are produced to form a beak like that of a duck, and their margins are sheathed with horn and furnished with transverse horny plates. The animal possesses no external ears, and the skeleton resembles that of birds in the extension of the coracoid bones to the anterior end of the sternum. But the strangest fact about this animal is that the young have, previous to birth, no vascular connection with the mother's system, but are born, as in birds or reptiles, as *eggs* which are subsequently hatched, This important fact has been lately determined by Mr. Caldwell, the holder of the scholarship founded in memory of the late eminent embryologist, Balfour. Mr. A. H. Caldwell, who went over to Australia to study the development of the Monotremata and their next allies, the Marsupials, has reason to congratulate himself on being able to put beyond doubt the existence of a phenomenon as unexpected as it is interesting. So important is this discovery considered that Professor Liversedge of Sydney telegraphed the intelligence to Montreal to enable the President of the Biological Section to announce the fact to the assembled members. It may be added that the Echidna, the only other member of the Monotremata, shares this remarkable function with the duck-mole.

New Species of Wild Horse.—The genus *Equus* consists in the present day of two subgenera, of which the horse and the ass are respectively types. Until lately all the wild specimens of the genus belonged to the ass type, but a Russian traveller, M. Przevalsky, has lately published an account of a new variety of the horse which he met with in his travels in 1881 in the deserts near the Altai Mountains. The typical horse differs from the ass in having the hind legs as well as the forelegs decorated

with warts, a flowing mane instead of a short upright ridge of hair, a forelock falling over the forehead, and a tail in which the long hairs start from the base and are not confined to a tuft at the end of the tail as in the asses. The new discovery of M. Przevalsky is intermediate in character between these two typical forms. Thus it possesses the stiff upright mane of the ass, has no forelock, and the long hairs on its tail do not start from the base but from a point about half way down the tail. While in these details it resembles the ass it has the warts on the hind legs peculiar to the horse, smaller ears than the asses, and broad round hoofs like the true horses; and, in addition, the stripe down the back, always present in the asses and sometimes present in the horses, is absent in this variety, to which in honour of its discoverer the technical name of *Equus przevalskii* has been given. It is whitish-gray in general colour, has short thick legs, a large and heavy-looking head, and is of small stature. The discovery of this animal is interesting, because it may possibly throw light on the origin of our domestic horse, which is not believed to exist anywhere in an aboriginally wild condition.

Some Results of Nerve Stimulus.—Dr. Kronecker, of Berlin, has found that if a certain nerve-centre in the heart of a dog is injured, the power of co-ordinating the contraction of the muscles of the heart is lost, and, as a consequence, the heart exhibits what are known as fibrillar contractions instead of its normal "beat." These fibrillar contractions are quite insufficient to expel the blood from the heart, and the circulation of the blood consequently stops. This explains why a mere superficial injury to the heart may, by severing one of these co-ordinating nerve-centres, produce death. Dr. Aronsohn has shown that a weak electric stimulus given to the olfactory nerves will excite the sense of smell. For this purpose the nostril was filled with a weak solution of salt and a platinum-wire introduced at the terminal of a circuit through which a weak current was passing. On closing the circuit by bringing the other terminal in contact with the hand or neck, a distinct smell was noticed which could not be compared with any known scent.

The Virus of Hydrophobia.—M. Pasteur has been experimenting on the virus of hydrophobia, and claims to have succeeded by suitable cultivation in so enfeebling the poison that its inoculation into healthy dogs causes merely locally painful symptoms, from which they soon recover. They are then found to be proof

against hydrophobia, M. Pasteur asserting that dogs thus inoculated cannot be rendered hydrophobic by any method. M. Pasteur first inoculated a monkey from a dog affected with rabies, then another monkey from the first, and a third from the second, when it was found that the virus had been sufficiently attenuated. If, instead of monkeys, the virus is passed through rabbits or guinea-pigs, so far from becoming weaker it actually increases in intensity. Subsequent experiments made by the Committee appointed by the French Government to investigate M. Pasteur's experiments have resulted in confirming his discovery. Twenty-three dogs which had been inoculated by M. Pasteur with his protective virus resisted all attempts to inoculate them with hydrophobia, while of nineteen dogs not previously protected only three escaped. Of these nineteen, five were inoculated by trephining, all becoming mad; eight by intra-venous injection, all likewise becoming mad; and the remaining six were bitten by mad dogs, and of these three went mad and three escaped. The Committee now intend to inquire whether the inoculation of a previously bitten dog with attenuated virus will prevent the animal going mad. Should this be the case, we may, in the words of the Committee, agree that M. Pasteur's researches are "honourable to French science, and give it a fresh claim on the gratitude of mankind."

The Cholera Germ.—The researches of Dr. Koch on the cholera have not met with the assent of some leading English biologists; both Dr. Klein and Professor Ray Lankester have strongly dissented from some of his conclusions, and have drawn attention to the apparently contradictory nature of some of his published results. Dr. Koch's conclusions as to the nature of cholera may be summed up as follows:—1. The bowels of all cholera patients are found to contain quantities of a peculiar comma-shaped bacillus. 2. This bacillus is the cause of cholera, and not merely a concurrent symptom. 3. The bacillus thrives in an alkaline, but is killed in acid solutions. 4. The only mode in which it can enter the body is by the nose or mouth into the stomach. As, however, the gastric juice secreted by the stomach, being normally acid, would destroy the bacilli, it is necessary to further assume that the spores of these bacilli have a greater resisting power than the bacilli themselves, and therefore pass through the stomach unharmed, to be developed in the suitable alkaline fluid of the small intestine. If this assumption is not found to be true, Dr. J. Althaus, who is a supporter of Dr. Koch, admits

that only those persons would be susceptible to cholera whose stomach was in an abnormal alkaline state, or so overloaded with food as to enable the bacilli to escape into the intestine unacted on by the gastric juice. This latter supposition is, however, strongly oppposed by Dr. Klein, who states that in cholera epidemics persons are attacked with the disease whose digestive organs are not in the abnormal condition which Dr. Koch's theory requires. Dr. Klein further maintains that, whatever may be the cause of cholera, the poison certainly enters in some cases by the respiratory organs, and that bacilli, undistinguishable from the comma-shaped bacilli of Dr. Koch, are found in other cases than those of choleraic patients. As Dr. Klein has been commissioned by the English Government to investigate the causes of cholera, we may hope that the rival theories of the two great investigators may result in the discovery of the truth.

Chemistry.

New Method of Organic Synthesis.—The rapidly extending regions of organic chemistry have been further enlarged by an important discovery made by Dr. W. H. Perkin, Junr., the son of the well-known discoverer of aniline dyes. Organic compounds have been roughly subdivided into two great groups, the so-called "fatty" and "aromatic" series. In the latter, of which benzene is a type, the compound molecule is supposed to be formed of six or more carbon atoms united to some one or more other elements. These carbon atoms are supposed to be attracted or linked to each other so as to form a closed circuit, such an arrangement being called a benzene "ring." In the "fatty" group the carbon atoms are supposed to be linked together to form an open chain. Dr. Perkin has, however, discovered that by appropriate reactions these open chains can be, so to say, closed up, forming in the non-aromatic group of compounds bodies containing the distinctive feature of a closed ring of carbon atoms as seen in the aromatic series. A similar reaction in a special instance has been subsequently discovered by Dr. Japp.

Discharge of Storage Batteries.—Professor Frankland has made a large number of experiments on the capabilities of storage batteries, and on the chemical changes which they undergo when discharged. He has found that, in batteries which he has made, the discharge of the energy accumulated takes place in two parts. The first part of the discharge gives an

electromotive force of about 2 volts, while the latter part of the discharge gives an electromotive force of only half a volt. The alteration from the 2 volts to the half-volt is extremely rapid, and from this Professor Frankland concludes that different chemical changes occur in the former and latter portions of the discharge.

The Manufacture of Soda and Chlorine.—Important improvements in the manufacture of soda and of chlorine for bleaching-powder have been introduced by the labours of Mr. W. Weldon and M. Pechiney. This process depends upon the decomposition of the ammonium chloride found in the first stage of the ammonia process by magnesia. The magnesia unites with the chlorine, forming a body known as oxychloride of magnesia, and setting free the ammonia. This oxychloride is then submitted to the action of a current of heated air, which re-forms magnesia and sets free some of the chlorine gas contained in the oxychloride. The chlorine gas, which is more or less diluted with nitrogen from the air, can then be used in the preparation of bleaching-powder. In the process devised by Messrs. Carey, Gaskell, and Hunter, a mixture of equivalent quantities of sulphate of ammonia and sulphate of soda is melted together, and steam passed through the fluid mass. The ammonia contained in the sulphate of ammonia is liberated as gas, and the sulphuric acid is set free. This free acid then unites with the sulphate of soda to form bisulphate or acid sulphate of soda. By treating this bisulphate of soda with common salt (chloride of sodium) sulphate of soda and hydrochloric acid are formed. This sulphate of soda may now be converted into carbonate of soda by the usual ammonia process, ammonium sulphate being again formed as a bye-product ready to take part in another series of transformations.

The firm of MM. Pechiney et Cie. are also working a process founded on Mr. Weldon's well-known "manganese" method. The black oxide of manganese is heated with hydrochloric acid, when chlorine gas and chloride of manganese are formed. This chloride is again treated with the oxide of manganese, and heated air forced through the mixture. In this case nearly all the combined chlorine is liberated as gas. Time, however, will be required before it can be decided whether these new processes are or are not commercially successful. In the former case the already depressed condition of the English manufacture of soda will be still further intensified.

The Assimilation of Nitrogen from the Atmosphere.—Professor W. O. Atwater has announced that, from the results of certain experiments he has made, he is satisfied that leguminous plants assimilate nitrogen from the atmosphere in a form other than that of ammonia or nitric acid, *i.e.*, that free nitrogen, one of the most inactive of known bodies, can be assimilated and built up into plant tissue. Professor Atwater prepared a soil absolutely free from nitrogen. In this he placed peas, and watered them with a nutritive solution containing among other constituents the nitrates of potash and lime. The amount of nitrogen thus added and the amount subsequently found in the plant was then estimated, and as a result he found that, except when very concentrated nutritive solutions were used, there was a considerable gain of nitrogen, amounting to from 38 to 50 per cent. above the total weight supplied. The bearing of such a fact on agricultural chemistry is of the greatest interest, since a gain such as his poorly-fed plants exhibited would represent an absorption of about 120 lbs. of free nitrogen per acre. The absorption of nitrogen by plants has been previously asserted by the French agricultural chemist, M. Ville, but his experiments have not met with general acceptance; those of Mr. Atwater may perhaps be more fortunate.

Specific Magnetic Rotation in Chemical Compounds.—If a ray of polarised light is transmitted through a transparent medium which is suspended between the poles of an electromagnet, and which is therefore subject to a magnetic stress, it is found that this ray of light has been rotated through a certain angle, the direction of which depends on the direction of the magnetic poles, but the amount of which depends upon the substance experimented on. Dr. W. H. Perkin has investigated the magnetic rotation due to a large number of liquid chemical compounds. The pure liquids were placed between the poles of a powerful electromagnet, in which the direction of the current could be rapidly reversed, and the amount of the magnetic rotation was then determined. In order to make the results obtained from different substances comparable with one another, the results were recalculated for a length of a column of each liquid, such as would be formed by the condensation of a unit-length of its vapour. By this means Dr. Perkin discovered that the specific rotary power of an atom is a constant quantity, which gives chemists another independent method of determining the molecular constitution of substances of equal value to those at present

used, which are based on the determination of specific volumes or of their refractive indices. The numbers calculated from the constants thus obtained agreed very closely with those found by experiment.

Catalytic Action of Water.—There are a large number of reactions between two bodies in which the presence of a third body is necessary, which third body is found at the conclusion of the reaction unaltered in amount. Mr. H. B. Dixon has shown that a mixture of pure carbonic oxide and oxygen will not explode, but will do so when a trace of water is present, and the same holds true of a mixture of carbonic oxide and nitrous oxide. In both these cases the two combining bodies have strong chemical affinity for each other, but the presence of water appears to be necessary to start the reaction. Mr. E. P. Dunnington has discovered also that silver will not tarnish in perfectly dry sulphuretted hydrogen, the presence of water being also necessary in this case.

Physics.

New Pattern of Safety Lamp.—An ingenious application of magnetism has been used in Germany to obtain a secure method of locking safety lamps. It is well known that any ordinary variety of lock is apt to be tampered with by some of the more reckless miners, and an explosion possibly caused thereby. In this new German pattern the upper part screws into the lower, and is provided on the inside with a set of teeth and a rachet, which slides over the teeth as it is screwed down, but falls into the teeth and prevents unscrewing. Thus, when the lamp is once lighted and screwed down, the miner is quite unable to reopen it without breaking the lamp. To release the ratchet a strong permanent magnet or electromagnet is used, which is kept in the overlooker's office. This electromagnet attracts a tail-piece affixed to the ratchet, and draws it out from the teeth, when the lamp can be opened without difficulty.

Electrical Standards.—The Electrical Congress of Paris was engaged in deciding on the particular definition to be adopted of the standard of electrical resistance called the *Ohm*. The ohm is the name given to the electrical unit of resistance, deduced from the fundamental units of length, mass, and time—the centimetre, gramme, and second. Numerous experimenters have been engaged in determining what would be the length of a column of mercury one square millimetre in section which

would exactly offer this amount of resistance to the passage of a current. This length has been variously determined at from 105 to 107 centimetres in length, the mean of the most accurate determinations being 106·02 cm. Hence the Congress, ignoring the small decimals, have recommended that the legal ohm shall be the resistance of a column of mercury at the temperature of 0° Centigrade, 1 square millimetre in section and 106 centimetres long, and this "practical ohm" will differ but little from the "absolute" or British Association ohm of 1864, the practical ohm being equal to 1·01125 B.A. unit. Resistance expressed in B.A. units can be reduced to the practical ohm by multiplying by ·9889 the reciprocal of the preceding decimal. Besides the ohm, another electrical standard has to be defined, and for this purpose Lord Rayleigh suggests that advantage be taken of a form of electric cell devised by Mr. Latimer Clark. The metals used in this cell are zinc immersed in a solution of sulphate of zinc and mercury in a paste of the protosulphate of mercury. The electromotive force of this combination remains practically constant, and is equal to 1·435 volts. Lord Rayleigh also finds, from the researches made by Kohlrausch and himself, that the unit of electrical current known as an Ampère will separate in one hour 4·025 grammes of metallic silver from a solution of silver nitrate. These determinations will allow accurate electrical standards to be readily obtained.

Friction and its Laws.—The amount of friction between two surfaces is generally stated to be proportional to the pressure on the surfaces, but independent of the area of these surfaces or of the speed with which they are moving over each other. Some experiments have however been lately made by Mr. Tower for the Institute of Mechanical Engineers which prove that our ideas on the subject of friction will need considerable revision. Mr. Tower finds that when two metallic surfaces are in contact, as in an axle and its bearings, or in a piston rod and its guides, the friction depends upon the velocity with which one surface is moving and upon the thoroughness with which the surfaces are kept supplied with a suitable lubricating material. The lubricant is necessary, otherwise the heat produced by the friction would, in accurately fitting work, cause the machinery to jam. Mr. Tower considers that in metallic bearings perfectly lubricated with oil, the force expended in overcoming the friction really causes a strain on the oil which results in dragging one layer of oil over the other, the adhesion between the oil and the

metal being greater than that between two adjacent layers of oil.

Balloon Steering.—M. Renard, a captain in the French Corps of Engineers, has constructed a balloon which is intended to be capable of being steered in any given direction. The balloon is an ellipsoid in form, being 60 metres long and 10 metres in diameter. The car is fitted with a long platform, at one end of which is the space for the voyagers, and at the other is the steering machinery, consisting of a dynamo-electric machine acting on a large screw, and a rudder some 10 metres square. An ascent made on 9th August was very successful, the balloon after a run of 2 miles being steered back to its starting point; but subsequent trials have been practically unsuccessful, and it is doubtful whether, on mechanical grounds, it will be ever possible to drive so large an object as a balloon against even a gentle wind by any machinery such a balloon may be able to carry.

C. A. Buckmaster, M.A.

THE MUSIC OF THE YEAR 1884.

The recent progress of music in England, if measured by the advance of musical education, not only in its higher forms at the Royal Academy, the Royal College, and the Guildhall School, but in its popular developments in the elementary school and in local societies, must be admitted to be most encouraging. In the department of public musical performance there has been of late less ground for satisfaction, partly, perhaps, owing to the absence of efficient leaders and partly to the overstrain upon those who are really able to come to the front. In the conducting of large orchestral and choral performances, for instance, there is a decided dearth of able men; and the death of Sir Michael Costa, the retirement of Mr. Henry Leslie, and the absence at Eton of Mr. Barnby, leave the field almost unoccupied. In the same way it is matter for regret that no one seems to have arisen to take up the work formerly so well and so nobly done by Dr. Hullah, and on a smaller but still very useful scale by Mr. G. W. Martin. The active Tonic Sol-Faists have covered much ground by their almost perfect organisation, but the followers of the Old Notation are apathetic in the extreme. In other respects the signs of a growing taste for concerts and organ

recitals, even among the poorest, are to be welcomed, and the success of the performances of the People's Entertainment Society, of the concerts in the Victoria Coffee Palace (formerly the Victoria Theatre), and of similar entertainments in other places, is more than maintained.

The progress of elementary musical education in Great Britain is to a great extent tested by the results of the examinations conducted by Dr. Stainer, as Her Majesty's Inspector, at the Training Colleges to which the most successful pupil teachers go up from the National Schools and Board Schools, prior to their entry on the profession as masters and mistresses. Dr. Stainer, in his annnal report in the Blue-book of the Education Department, says that he found in the 35 colleges which he visited many pupil teachers who had received no musical instruction in their school course, but he hopes that the operation of Mr. Mundella's New Code, by requiring note-reading in elementary schools as the condition of receiving the higher music grant, will gradually bring about an improvement in this respect. Dr. Stainer has the help of two assistant inspectors, Mr. W. A. Barrett, Mus. Bac. Oxon., and Mr. W. G. McNaught, a well known Tonic Sol-Fa teacher, and the reports of these gentlemen credit the students who had received musical teaching with a fair measure of success, not only in vocal but in instrumental work. It is obvious that if the country is to pay grants for musical instruction in elementary schools, it will be needful, ultimately, to send skilled musicians as inspectors to the schools on the plan now adopted with the Training Colleges, and Dr. Stainer, in his report, suggests that such a course must, ere long, be adopted.

In the provision of what may be termed professional education in music, the Royal Academy steadily holds its own, notwithstanding the success of the Royal College of Music, under Sir George Grove's direction. In connection with the latter institution several new scholarships have been founded during the year; and the personal co-operation of the Royal Dukes and their friends is likely to secure further assistance in this direction, not only from individuals but from public bodies and districts. The Guildhall School of Music, as an institution on a popular basis, furnishes a striking illustration of the success which may be attained by energetic and competent management on a comparatively small capital. The school at its opening in 1878 began work with 216 pupils; in 1881 the number had

risen to 907; while at the date of the annual report recently issued it stood at 2,185. The plan adopted of paying over to the Professors the fees received from the students with a 5 per cent. reduction for working expenses seems to give general satisfaction, and the amount thus paid rose from 10,000*l.* in 1882 to 12,992*l.* in 1883. The staff of Professors teaching in the school is 85, and 2,987 lessons are given every week. Some idea of the amount of work done may be formed from the fact that it has been needful to increase the number of class-rooms from nine to twenty-one, and these, we are told, are occupied daily from 8.30 A.M. to 9.30 P.M. The Corporation has munificently aided the school—its contribution towards the expenses amounting last year to 4,204*l.*—and it is now considering the propritey of erecting new buildings for the accommodation of the students, the space at present available being altogether inadequate. Mr. Weist Hill retains his office as Principal.

The Musical Association is going quietly on its way, and in its tenth session from November, 1883, to May, 1884, many valuable papers were read, all fairly coming within its legitimate scope as a society "for the investigation and discussion of subjects connected with the art and science of music." The fact, noted in the paper on "The Occupations of the People," in the present issue of the "Companion," that music is relegated by the compilers of the Census to a place among the "amusements" of the people, and that "the potent, grave, and reverend seigneurs" of the craft, those "very noble and approved good masters," the composers and conductors, are reckoned up with the organ-grinders and other entertainers of the race, shows that there is still a distinct place for a body which elevates music to its proper platform as an Art and a Science, and the volume of "Proceedings" of the Association just published by Stanley Lucas, Weber, and Co. will be found well worthy of notice, alike by professors and amateurs. Among the deeper dissertations offered to the members were two elaborate papers by Mr. Gerard F. Cobb, M.A., Fellow of Trinity College, Cambridge, "On Certain Principles of Musical Exposition considered Educationally and with special Reference to Current Systems of Musical Theory," to which Sir George Macfarren, Mr. Prout, and Mr. C. E. Stephens contributed important criticisms; and another paper which may be placed in the same category was that of Mr. Ferdinand Praeger, on "Form." An interesting branch of the science of music on its practical side was introduced by Mr. Emil Behnke

in a paper "On Photographs of the Throat in Singing," in which, with the aid of a screen, he showed the laryngeal image, and gave an account of the results attained by laryngoscopy. The wonderful success which has followed the combined investigations of medical men and musicians into the nature and action of the vocal organs was clearly proved by the demonstration of Mr. Behnke. At another meeting a contribution to musical biography was made by Sir George Macfarren, the Principal of the Royal Academy of Music, in a sketch of "Cipriani Potter, his Life and Work," in which he did full justice to Potter's ability as a teacher and composer, and gave some reminiscences of the eminent musician's work as Principal of the Royal Academy of Music from the years 1832 to 1859, when he resigned all his appointments. Two papers of a more popular type were contributed during the season by the Rev. M. E. Browne, whose subject was "Words for Music," and Mr. J. S. Shedlock, B.A., who dealt with "The Maltreatment of Music;" while, midway between the popular and the severe, may be placed the admirable plea of Dr. C. J. Frost for "Theoretical Study as an Assistance to Execution."

In the range of Church music the restoration of the subject to a place in the programme of the Church Congress is worthy of mention, and it is even more satisfactory to be able to add that in its treatment at Carlisle a wise departure was made from the practice of earlier Congresses. Instead of making the meeting devoted to it a mere *bonne bouche*—a sacred concert with running comments from a lecturer—the subject was handled seriously and critically by several competent speakers, including Mr. W. H. Gladstone, M.P., Mr. Walter Parratt (Sir George Elvey's successor in the organistship of the Royal Chapel of St. George, at Windsor), and Mr. Hylton Stewart, the Precentor of Chester Cathedral. The amateur, the professor, and the cleric were thus brought side by side, and with the speeches in the subsequent discussion a very sensible "symposium" was arrived at. In the practice of Church music, if we may judge from the fact that a choral service is now the rule in 399 out of the 940 churches within 12 miles of London, and that a partly choral service obtains in 333, we have distinct evidence that the introduction of music in public worship is growing in popularity. Whether it is used wisely and well is another matter altogether, and we are disposed to think that there is still room for a composer who will come forward and

show us how to reconcile the competing claims of choir and congregation—or, rather, will give full play to the powers of both—and who will, while adhering to the main lines of the Church Service, produce a complete and satisfactory piece of worship-music. At present, in nine cases out of ten, even where noble organs, musically-trained clergy, competent organists, and strong choirs are to be found, the result is but a collection of "disjecta membra," if not the "rudis, indigestaque moles," of the poet. What Palestrina did for Italy, and John Sebastian Bach did for Germany, still remains to be done for England, and if the energies of our leading musicians were not so generally expended on teaching, or on composition of an order which belongs to the music shop rather than to the Church or the concert room, we might hope that the work would be accomplished.

Music at the Universities seems to be flourishing, although the insufficient endowment of the Professorships at Oxford and Cambridge reduces the duties of the two Music Chairs to little more than the delivery of a few terminal lectures. At Cambridge, the concerts of the University Musical Society have always been sufficiently interesting to draw a contingent of metropolitan amateurs to the banks of the Cam, and in addition to these performances the introduction of Dr. Hubert Parry's music to "the Birds" of Aristophanes deserves mention as a contribution to the art well worthy of the University. At Oxford, the work done, although of a more ordinary character, serves to keep the art well to the fore in the estimation of the undergraduates, and of the resident members of the University.

Turning to the music of the year on the stage and in the concert room, it must be confessed that Italian opera was during the season almost a dead letter, the "Sigurd" of Reyer, a French composer, being its only novelty; but London amateurs were compensated by the Carl Rosa Company's performances at Drury Lane Theatre, with Mr. Randegger as conductor, at one of which Mr. C. Villiers Stanford directed the production of his "Canterbury Pilgrims." At the same house German Opera, with Madame Albani as a chief attraction, gave the followers of Wagner a golden opportunity, of which they were not slow to take advantage, of hearing his "Tannhauser," "Lohengrin," "Tristan und Isolde," "Die Fliegende Hollander," and "Die Meistersinger." A tribute to an English composer was paid during the short season by the production, under the

personal direction of Herr Richter, of Mr. Villiers Stanford's "Savonarola."

Still foremost among the orchestral concerts of the year the Crystal Palace Saturday performances, which reached their twenty-eighth season, introduced a few important novelties to the English public, and among them Raff's "Autumn" symphony in F minor; Sir R. Stewart's orchestral Prelude in D; Dvorak's pianoforte Concerto in G minor; Golterman's violoncello Concerto in B minor; and Dupont's pianoforte Concerto in F minor, Op. 49. A Mendelssohn Memorial Concert on the Saturday after the anniversary of his death gave a welcome excuse for a revival of his "Walpurgisnacht," which is too seldom heard. At another "special Saturday," Mr. Manns, who had gone to Glasgow to conduct some local concerts, gave place to Mr. Villiers Stanford, and the Serenade in G by the clever Cambridge doctor, produced at the last Birmingham Festival, was played in London for the first time, while another "University piece" was introduced in the shape of a selection from Dr. Parry's Music to "the Birds." At a Spohr Centenary Concert on the birthday of the composer the programme was entirely made up of his music, the symphony being "The Power of Sound," the overtures "Faust" and "Jessonda," the Concerto No. 8 in A for violin, and these, with one or two minor instrumental items and some of his choicest songs, made up an admirable scheme.

The Philharmonic Society, with the opening of its seventy-second season, returned to an ancient practice, for in the place of a single conductor, Mr. W. G. Cusins, several gentlemen, described on the programmes as "honorary conductors," directed the performances, among them being Mr. George Mount and Mr. F. H. Cowen. One of the events of the season was the appearance of Dr. von Bülow. The programmes of the Richter Concerts, conducted by the eminent German *chef* whose name they bear, were divided between Bach, Beethoven, Wagner, Brahms, and Liszt, the modern Teutons, and especially Wagner, having the lion's share of the scheme. There was little novelty in the programmes, but the finished character of the playing, and the scanty opportunities afforded in London of hearing music of the class which Herr Richter produces, gave his concerts an interest of their own. Among the oratorio performances of the year, the first rendering in London of Macfarren's "King David," given by the

Sacred Harmonic Society under the beat of Sir Arthur Sullivan, deserves to be mentioned. The work had been previously heard at the Leeds Festival, for which it was composed. The Bach Choir wandered somewhat from the Leipzig cantor, its programmes containing, in addition to the works of the great master, a mass by Palestrina, and minor pieces by Wesley, Stanford, Eccard, Rockstro, Mozart, Brahms, and Goldschmidt.

The demise of the Musical Union, although its venerable founder, Professor Ella, is, we rejoice to say, still amongst us, has left Mr. Arthur Chappell master of the situation in the provision of chamber performances, and his Monday and Saturday Popular Concerts, which have since entered on their twenty-eighth year, proved as attractive as of yore. The programmes contained little of novelty, but a pianoforte quartet in E minor, Op. 11, by Fibich, a young Bohemian composer, and a pianoforte trio by Mozart in C major, No. 7, were heard for the first time. Mr. Chappell's list of pianists was unusually strong, in fact the London season, as a whole, was rich in pianoforte playing, among those who gave recitals being Madame Montigny-Remaury, Madame Schumann, Mdlle. Janotha, Herr Pachmann, and Dr. von Bülow. Among other artists of renown who visited London during the season note must be taken of Signor Bottesini, the celebrated double-bass player, whose concerts recalled his performances of many years ago; and of Senor Sarasate, the violinist, whose magnificent playing at his five concerts was much appreciated by connoisseurs.

The Benedict Jubilee deserves a line of record as a proof that the cosmopolitanism of English musicians is no mere sentiment, but a genuine recognition of the fact that music as an art and as a language rises above nationality. No native composer could have received a more gratifying demonstration, at once artistic and popular, than was given to the veteran at the performance of his "St. Peter" at the Albert Hall on June 6th, and at his annual concert on the following day, while later on a more substantial proof of the regard in which he is held was presented to him in the form of a handsome testimonial. The course thus taken was in full accord with the precedent of English musical history, for from the days of Handel, Beethoven, and Moscheles, down to Costa, Benedict, Pauer, Manns, and a host of minor celebrities, England has ever given, not only a welcome, but a home, without grudging, to artists of all the European families. If English musicians

in the past have not always received a similar greeting abroad —and perhaps the almost contemptible assumption of modesty which has led our countrymen to proclaim before the world that "we are not a musical people" may be credited with a share of the blame for the coldness shown to us by foreigners—it is pleasant to note a healthier movement, especially in Germany, where the new works of Mr. Goring Thomas and Mr. Stanford have been well received.

The obituary of the year includes, first and chief, Sir Michael Costa, whose musical death-knell may be said to have sounded at the Handel Festival of 1883, when, after having been announced to the last moment as the conductor, he was compelled to hand over the *bâton* to Mr. Manns. Few men of the present generation have done more useful work than Sir Michael did in the orchestra, and, despite his idiosyncracies as a conductor, his capacity in handling a monster band and choir, such as that which assembled at the great Sydenham music meeting, was unequalled. A few months later passed away another musician of note, who may be said to have left an enduring mark on the artistic progress of England, for it was to John Hullah that the impetus given to the popular practice of choral music, and the training of the people in sight-singing, were mainly due. As an educated artist, Dr. Hullah could wield the pen as easily as the conductor's stick, and, as a proof of his many-sidedness, it may be said that, after spending many years as a teacher of singing classes, he filled the office of college lecturer, organist at the old Charterhouse Chapel, musical critic to the "Globe" and other journals, and Government Inspector in Music of the Training Colleges. Another great name in the death-roll is that of Mario, the first tenor of his day, and without question one of the most graceful actors the lyric stage has ever seen. It was a happy coincidence which enabled Mr. Cusins to represent, not only the Queen of England, but the musicians of England, at the great artist's funeral, for to England he gave his best years, though he clouded his fame by singing after he had passed the height of his powers. Amongst other well-known musicians whose names have to be added to this list are Dr. Corfe, the Choragus of the University of Oxford, and Nelson Varley, the vocalist.

ENGLISH PHILANTHROPY IN 1884.

In any survey of the year which touches the region of philanthropic effort, whether it be in regard to construction or organisation, the creation of new societies, or the improvement of existing institutions, a tribute may fitly be paid at the outset to the Duke of Albany, whose too early death has removed a princely worker from this important field. The chairmanship of the Charity Dinner—an emphatically English institution—has always been regarded as a worthy employment for Kings and other members of the Royal Family, just as the patronage of bazaars for benevolent purposes has always been readily undertaken by the ladies of our Royal House, but Prince Leopold in his efforts in this direction went below the surface, and bestowed considerable thought upon the practical working of the great philanthropic machine. By accepting the office of President of the Charity Organisation Society, the Prince showed that he desired to be numbered among the active participators in the very needful movement for the reform of abuses and for the rearrangement of overlapping agencies, while in the case of separate institutions, those who remember his speech at the annual dinner of the Printers' Pension Corporation in 1883, can bear witness to the minuteness with which His Royal Highness examined into the principles and working of the fund before giving it his sanction. To lose a prince who had thus of his own free will marked out for himself a course of public usefulness in a path where exalted leadership is no mean advantage, was a calamity which justly called forth expressions of national sorrow, and it will not be an easy task to fill his place unless it should happily prove to be the case that one of the sons of the Prince of Wales should a few years hence elect to follow in his uncle's footsteps.

The London Hospitals have received no addition during the year, but to the list of the Convalescent Homes—the necessary complement of the hospital, if its work is to be carried to its proper issue—we have to add Miss Mary Wardell's Home, at Edgware, for persons convalescing from scarlet fever, which was opened just before the close of the London season by the Prince and Princess of Wales. No institution has been more urgently needed, for although even for ordinary cases the Convalescent

Homes are still too few and far between, there has hitherto been no asylum for patients convalescing from this form of fever. When it is remembered that scarlet fever is a more potential death factor than small-pox, and that its sequelæ, if proper medical supervision and adequate nourishment are wanting, are often even worse than the disease itself, the value of Miss Wardell's scheme is obvious, and she is to be congratulated on the success which has crowned her efforts. The problem of dealing with patients suffering from infectious diseases, who are able either wholly or partially to pay for the cost of their treatment, is now in a fair way of being solved, as far as the metropolis is concerned, by the resolution of the Metropolitan Asylums Board, to admit such persons at a stated tariff to their hospitals.

In the kindred work of the nursing of the sick poor at their own homes, progress is also being made, and parishes are combining to employ ladies trained at one or other of the London institutions who reside at some central spot and are always available. The benefit conferred on the industrious poor by the presence in the sick room, even for half an hour, of a trained hand, is not confined to the additional comfort and cleanliness which it brings to the patient, but reacts in the most wholesome manner on the whole neighbourhood, where some proficiency in the art of nursing becomes henceforth a possibility. An alliance between the nurse and the Provident Dispensary adds another link to the chain of protection which the poor so sorely need, not only against positive sickness, but against their own ignorance of sanitary laws, and when the ministers of religion and their fellow workers, paid and voluntary, join hands with the doctor and the nurse, the *cordon* becomes as nearly complete as it is probably possible to make it.

From physical to moral disease the step is not a long one, for to a very large extent they are twin sisters, and that which tends to diminish the one, helps materially to eradicate the other. This being the case, the increase in the number of institutions for housing young people engaged in business, and for providing them with healthy recreation, is to be welcomed. Such a work is not indeed charity in the restricted sense in which the word is too often used now-a-days, but it is genuine philanthropy, and thus comes within our touch. For young men engaged as clerks and warehousemen the Hampden Club, erected at St. Pancras, has been opened during the year as a place of residence, with separate sleeping apartments and common living

and recreation rooms, and it seems likely to prove a decided success. For lads of a lower grade in the social scale, the Youths' Institute, in Whitechapel, has long been doing good work, and during October, the first stones of a large permanent building for the members were laid, Her Majesty the Queen being among the contributors to the building fund. A house of a similar type for members of the other sex has been opened during the year, in Soho, by the Hon. Maude Stanley, and it is pleasant to find that ladies of the highest rank are readily giving the personal co-operation and friendly association with their working sisters which form such an essential part of Miss Stanley's scheme.

Among the new societies established during the year we may mention the Association for the Prevention of Cruelty to Children, based upon the model of a Society with a kindred aim long existing in Liverpool. It has already succeeded in establishing one shelter where children who are ill-treated by their parents or guardians can be received; and, in addition to its rescue work, it will seek to enforce the laws for the safeguarding of the young. The moral effect of the establishment of such a society ought to be very considerable, for it will serve as a sort of public prosecutor in the interests of the little ones whenever they are badly-used by those who ought to be their protectors. Another useful scheme for the benefit of the juvenile part of our town populations is the Holiday Fund, which seeks to give children who need change of air and recreation a few days or weeks in some country village. The plan adopted is to board the little people with a cottager, and to induce the local clergy or other friends to look after the guests during their stay.

In addition to the work of the ordinary charitable societies and institutions, the Metropolitan Hospital Sunday Fund and the Hospital Saturday Fund continue their operations. The Hospital Sunday collections reached a sum of 39,329*l.*, exceeding that of any previous year, and to this amount the proceeds of a special entertainment at the Health Exhibition, reaching upwards of 4,500*l.*, has been added. The following table shows the progress of the fund during the last twelve years:—

1873	£27,700	1879	£26,501
1874	29,936	1880	30,404
1875	26,396	1881	31,000
1876	27,042	1882	34,424
1877	26,083	1883	33,935
1878	24,904	1884	39,329

The liberality of the bankers, merchants, and commercial men of the city has shown itself during the year in the readiness with which the Lord Mayor's appeal for aid for the sufferers from the Earthquake in the Eastern counties was responded to, a sum of 11,000*l.* having been subscribed and distributed. Within the last two years the following amounts have been collected at the Mansion House for special objects :—

Famine in Iceland Fund ..	£5,500	Clay Cross Colliery Accident..	£1,681
Fire in Jamaica Fund	7,867	Cholera in Egypt Fund ..	2,910
Fishing Disasters in the North Seas	1,796	Island of Lewis Relief Fund ..	653
		Earthquake in Essex	11,000
Destitution in the Western Islands of Scotland	5,500	"Nisero" Captives Fund ..	1,100
		Naples Cholera Fund	1,300

The Charity Organisation Society is continuing its useful work, and in the year ending September 30, 1883—the returns for the year just ended are not yet published—the number of cases investigated by the 39 District Committees was 19,853, of which 8,659 were relieved from different sources, while the remaining 11,234 were found to be beyond the reach of any temporary help, or not to require relief. The central committees all report that they are making fair progress, and the only complaint made is that those in the west give scarcely enough support to less wealthy districts. In East London the workers of the Society are ever face to face with the lower level of existence among multitudes who may be described as unskilled labourers, with precarious employment, and wages scarce sufficient for sustaining life. Two hopeful points may be noted—the establishment of a settlement of University men in an East London parish, and the connection which has been established between Poplar and the suburban district of Hampstead. But it is in the south of London, and the suburbs on the other side of the Thames, that the worst difficulties are met with—the lack of workers, and the apathy of those classes from whom workers should be drawn being so great that the Camberwell and Peckham Committees have felt themselves compelled to withdraw from the larger portion of their district.

The Convalescent work, which was taken up actively in the spring of 1883, has been carried on with unimpaired activity. As the Chairman of Council has recently stated :—"The plan of reserving beds in various homes, at an average cost of 25*l.* per bed, has worked most successfully, securing the prompt despatch of patients, and a definite addition to the income of the institu-

tions. By the agency of the Central Office, communication is kept up between some seventy houses (many of them up to this time comparatively unknown) and our District Committees, which cover almost the whole area of London, and have special facilities for knowing the wants of its sick poor." From June to December 1883, 603 patients were thus provided for; and in 1884, up to the end of September, the number reached was 1,373. In addition to this, an endeavour is now being made to facilitate the supply of surgical appliances, and also to apply the resources of general charity to the assistance of those families whose breadwinner is incapacitated by illness, by establishing a communication between the Society and our great hospitals. For these ends a Medical Society was appointed early in the summer. A proposal was made last autumn that the Society should in its corporate capacity undertake the direction of the movement in favour of sanitary aid, but, after full discussion, it was resolved to leave this work to a separate agency, with which the Committee of the Society in each district was asked to co-operate. This has been done, with good results. A similar decision was arrived at in regard to the movement for giving summer outings to ailing children. The Society continues its useful work of repressing mendicity, and its efforts in preventing and checking the fraudulent operations of persons who, in a sense very different from the original meaning of the words, make their so-called charity "cover a multitude of sins," has been very considerable, despite the unsatisfactory state of the laws bearing on the subject.

TABLE OF ALL THE PUBLIC GENERAL ACTS

PASSED IN THE FIFTH SESSION OF THE TWENTY-SECOND PARLIAMENT OF GREAT BRITAIN AND IRELAND.

47 & 48 VICTORIÆ. A.D. 1884.

(The Acts are given in the order in which they were passed, the number denoting the chapter. An abstract of those Acts distinguished by an asterisk is given in the pages following this table, which contain a classified epitome of the more important statutes passed during the session.)

1. An Act for settling and securing an Annuity upon the Right Honourable Sir Henry Bouverie William Brand, G.C.B., in consideration of his eminent Services.

(Settles an annuity of £4,000 upon the Right Hon. Sir Henry Brand.)

2. An Act to make further provision respecting the Conversion into Two and a half per Cent. Annuities of Three per Cent. Annuities held by the National Debt Commissioners on account of Savings Banks, and for the Redemption of the Indian Loan Annuity, 1881.

(Repeals (upon the cancellation of the last remaining portion of the Indian Loan Annuity, 1881) s. 7 of 46 & 47 Vict. c. 54; National Debt Act, 1883, and also 44 & 45 Vict. c. 54; Indian Loan Act, 1881; applies 46 & 47 Vict. c. 54.)

*3. An Act for the Relief of Brokers of the City of London.

(Amends 6 Anne, c. 16; Brokers (City of London).
" 57 Geo. 3, c. 60; Gauger (City of London): Brokers.
" 33 & 34 Vict. c. 60; London Brokers' Relief Act, 1870.)

4. An Act to apply certain sums out of the Consolidated Fund to the service of the years ending on the 31st March, 1883, 1884, 1885. (£11,817,505 14*s.* 10*d.*)

*5. An Act to amend the Valuation (Metropolis) Act, 1869, by giving greater facilities for appeal to owners and lessees of houses paying rates and taxes in the place of the occupiers.

(Amends, and is construed with, 32 & 33 Vict. c. 67; Valuation (Metropolis) Act, 1869.)

6. An Act to confer further powers upon the Commissioners of Public Works in Ireland of acquiring lands in Dublin for all or any of the purposes of the Dublin Science and Art Museum Act, 1877.

(Amends 40 & 41 Vict. c. 234; Dublin Science and Art Museum Act, 1877. Incorporates 8 & 9 Vict. c. 18; Lands Clauses Consolidation Act, 1845.)

7. An Act for amending the Isle of Man Harbours Acts, 1872 and 1874.

(Amends 35 & 36 Vict. c. 23; 37 & 38 Vict. c. 8; } Isle of Man Harbours Acts, 1872 and 1874.)

8. An Act to provide, during twelve months, for the Discipline and Regulation of the Army.

(Continues, and amends, 44 & 45 Vict. c. 58; Army Act, 1881.)

*9. An Act to amend the Law as to Appeals in Bankruptcy from County Courts.

(Amends 46 & 47 Vict. c. 52; Bankruptcy Act, 1883.)

*10. An Act to amend the Irish Church Act, 1869; and for other purposes.

(Amends 32 & 33 Vict. c. 42; Irish Church Act, 1869.)

11. An Act for the further Protection of Fish other than Salmon in Fresh Waters.

(Amends and applies 41 & 42 Vict. c. 39; Freshwater Fisheries Act, 1878.
Extends, explains, and applies 28 & 29 Vict. c. 121; Salmon Fishery Act, 1865.
Extends and applies 36 & 37 Vict. c. 71; Salmon Fishery Act, 1873.
Applies 39 & 40 Vict. c. 19; Salmon Fishery Act, 1876.
Provides for application of this Act and of 41 & 42 Vict. c. 39 (with certain exceptions) to Norfolk and Suffolk.)

12. An Act to amend the Public Health Act, 1875, so far as relates to the Confirmation of Byelaws.

(Amends 38 & 39 Vict. c. 55; Public Health Act, 1875.
Incorporates s. 128 of 10 & 11 Vict. c. 34; Towns Improvement Clauses Act, 1847.
" s. 68 and s. 69 of 10 & 11 Vict. c. 89; Town Police Clauses Act, 1847.
" s. 42 of 10 & 11 Vict. c. 14; Markets and Fairs Clauses Act, 1847.)

13. An Act to amend the Contagious Diseases (Animals) Act, 1878.

(Amends 41 & 42 Vict. c. 74; Contagious Diseases (Animals) Act, 1878.)

14. An Act to amend the sixteenth section of the Married Women's Property Act, 1882.

(Amends 45 & 46 Vict. c. 75; Married Women's Property Act, 1882.)

15. An Act to apply the sum of £6,519,368 out of the Consolidated Fund to the service of the year ending on the 31st March, 1885.

16. An Act to apply to Scotland certain provisions of the Bankruptcy Act, 1883.

(Applies to Scotland certain provisions of the Bankruptcy Act, 1883, (46 & 47 Vict. c. 52.)
Applies 43 & 44 Vict. c. 34; Debtors (Scotland) Act, 1880.)

17. An Act to provide for the appointment of an additional Assistant Commissioner of Police of the Metropolis and for other purposes relating to the Commissioner and Assistant Commissioners of such Police.

(Provides for the appointment of an additional Assistant Commissioner of Police.
Amends and applies 19 & 20 Vict. c. 2; Metropolitan Police Act, 1856.
" " 31 & 32 Vict. c. 67: Police Rate Act, 1868.
" " 38 & 39 Vict. c. 28; Metropolitan Police Staff (Superannuation) Act, 1875.
Recites, in Schedule, Metropolitan Police Acts, 1829 to 1875.)

18. An Act to amend the Settled Land Act, 1882.

(Amends 45 & 46 Vict. c. 38; Settled Land Act, 1882.)

19. An Act to amend the Summary Jurisdiction (Ireland) Acts so far as they relate to Children and young Persons.

(Amends Summary Jurisdiction (Ireland) Acts.
Extends certain enactments relative to appeals.
Recites in Schedule, Indictable Offences which can be dealt with summarily.)

20. An Act to remove Doubts as to the Validity of certain Marriages of Members of the Greek Church in England.

(Removes doubts as to validity of certain Greek Marriages.
Applies 21 & 22 Vict. c. 93; Legitimacy Declaration Act, 1858.)

21. An Act to provide for the better administration of the Fund under the control of the Trustees to aid the Sea and Coast Fisheries of Ireland, and for other purposes in relation thereto.

(Transfers fund to Commissioners of Public Works in Ireland.
Incorporates certain provisions of 37 & 38 Vict. c. 86, and 45 & 46 Vict. c. 16; Irish Reproductive Loan Fund Acts, 1874 and 1882.)

22. An Act to amend the Law relating to Buildings of Non-vested National Schools and Training Colleges in Ireland.

(Amends Law relating to Buildings of Non-vested National Schools, &c.
Applies Landed Property Improvement (Ireland) Acts, 10 & 11 Vict. c. 32, &c.)

*23. An Act for giving Facilities for the Conversion of Three per Cent. Stock into Stock of a Lower Denomination, and for other purposes relating thereto.

(Applies 33 & 34 Vict. c. 71; National Debt Act, 1870.
Extends 43 & 44 Vict. c. 36; Savings Banks Act, 1880.)

24. An Act to amend the Colonial Attorneys Relief Act.

(Amends 20 & 21 Vict. c. 39; 37 & 38 Vict. c. 41; Colonial Attorneys Relief Act.)

25. An Act to grant certain Duties of Customs and Inland Revenue, to alter other Duties, and to amend the Laws relating to Customs and Inland Revenue.

(Continues Import Duties on Tea (6*d*. the pound).
Grants duty of 15*s*. on licence for hackney carriage.
Reduces duties on carriages commenced to be used on or after the 1st October in any year.
Grants duties of income tax, and applies former Acts.)

26. An Act to amend the Fisheries (Oyster, Crab, and Lobster) Act, 1877.

(Amends 40 & 41 Vict. c. 42; Fisheries (Oyster, &c.) Act, 1877.)

27. An Act to further amend the Sea Fisheries Act, 1868.

(Further amends 31 & 32 Vict. c. 45; Sea Fisheries Act, 1868.)

28. An Act to amend the Tramways and Public Companies (Ireland) Act, 1883.

(Amends 46 & 47 Vict. c. 43; Tramways and Public Companies (Ireland) Act, 1883.)

29. An Act to extend Section 41 of the Licensing Act, 1872.

(Extends s. 41 of 35 & 36 Vict. c. 94; Licensing Act, 1872.)

*30. An Act to simplify the passing of Instruments under the Great Seal of the United Kingdom.

(Repeals 27 Hen. 8, c. 11; Clerks of the Signet and Privy Seal.
,, 14 & 15 Vict. c. 82; Forms of Appointments to certain Offices, &c., under Great Seal.
,, s. 3 of 43 & 44 Vict. c. 10; Great Seal Act, 1880.
Applies 40 & 41 Vict. c. 41; Crown Office Act, 1877.)

31. An Act to make further provision respecting the removal of Prisoners and Criminal Lunatics from Her Majesty's possessions out of the United Kingdom.

(Applies 37 & 38 Vict. c. 27; Courts (Colonial) Jurisdiction Act, 1874.)

32. An Act for transferring the Royal Military Asylum at Chelsea from the Commissioners of Her Majesty's Woods, Forests, and Land Revenues to the Commissioners of Her Majesty's Works and Public Buildings.

(Transfers the Asylum from Commissioners of Woods to Commissioners of Works.)

*33. An Act to make provision for the foundation of a Dean and Chapter for the Bishopric of Newcastle, and for the transfer to the Cathedral Church of Newcastle of one of the canonries in the Cathedral Church of Durham, and for the transfer of certain ecclesiastical patronage to the Bishopric and Chapter of Newcastle, and for other purposes connected therewith.

(Recites 41 & 42 Vict. c. 63; Bishoprics Act, 1878.)

*34. An Act to extend the Hours of Polling at Parliamentary and Municipal Elections in certain Boroughs.

(Applies 45 & 46 Vict. c. 50; Municipal Corporations Act, 1882.
,, 3 & 4 Vict. c. 108, &c.; Municipal Corporations (Ireland).)

35. An Act to facilitate the Revision of Lists of Jurors and Voters, and the Registration of Voters, in the county of Dublin.

(Applies provisions of Acts regulating registration of Parliamentary voters in counties in Ireland, &c.)

36. An Act to amend the General Prisons (Ireland) Act, 1877, in certain particulars.

(Amends 40 & 41 Vict. c. 49; General Prisons (Ireland) Act, 1877.)

*37. An Act to amend the Public Libraries Acts.

(Amends 18 & 19 Vict. c. 70, 29 & 30 Vict. c. 114, 34 & 35 Vict. c. 71, 40 & 41 Vict. c. 54; Public Libraries (England) Acts, 1855 to 1877; 30 & 31 Vict. c. 37, 34 & 35 Vict. c. 59, 40 & 41 Vict. c. 54; Public Libraries (Scotland) Acts, 1867 to 1877; 18 & 19 Vict. c. 40, 40 & 41 Vict. c. 15, 40 & 41 Vict. c. 54; Public Libraries (Ireland) Acts, 1855 to 1877.)

38. An Act to provide for the regulation of Her Majesty's Indian Marine Service.

(Provides for the regulation of Her Majesty's Indian Marine Service.
Applies 24 & 25 Vict. c. 67; Indian Councils Act, 1861.)

*39. An Act to amend the Naval Discipline Act, 1866.

(Amends 29 & 30 Vict. c. 109; Naval Discipline Act, 1866.
Applies 44 & 45 Vict. c. 58; Army Act, 1881.
Provides (in s. 7) for printing of Naval Discipline Act, 1866, as amended.
Repeals (with savings) the following:—
44 Geo. 3, c. 13; Desertion and Escape of Petty Officers, Seamen, and others from His Majesty's Service.
5 Geo. 4, c. 83, s. 16 in part; Punishment of Rogues and Vagabonds.
29 & 30 Vict. c. 109 in part; Discipline of the Navy.)

40. An Act for enabling Manx Children to be sent to Reformatory or Industrial Schools in Great Britain.

(Applies 29 & 30 Vict. c. 117; Reformatory Schools Act, 1866.
,, 29 & 30 Vict. c. 118, ,, 43 & 44 Vict. c. 15 } Industrial Schools Acts, 1866 and 1880.)

*41. An Act to amend the Building Societies Act, 1874.

(Amends 37 & 38 Vict. c. 42; Building Societies Act, 1874.)

42. An Act to amend the Sheriff Court Houses Act, 1860.

(Amends 23 & 24 Vict. c. 79; Sheriff Court Houses (Scotland) Act, 1860.
Extends and applies Sheriff Court Houses (Scotland) Acts.)

43. An Act to repeal divers Enactments rendered unnecessary by the Summary Jurisdiction Acts and other Acts relating to Proceedings before Courts of Summary Jurisdiction, and to make further provision for the uniformity of Proceedings before those Courts.

(Repeals (with proviso) the enactments contained in the Schedule.
,, obsolete punishments for non-payment of fines, &c.
Removes doubts as to application of Summary Jurisdiction Acts, and as to expression "court of summary jurisdiction."
,, doubts, also, as to effect of s. 227 of 45 & 46 Vict. c. 50, Municipal Corporations Act, 1882), on s. 38 of 42 & 43 Vict. c. 49 (Summary Jurisdiction Act, 1879), and as to effect of forms altered by rules made by the Lord Chancellor.)
Applies 11 & 12 Vict. c. 43; Summary Jurisdiction Act, 1848.
Applies and extends 42 & 43 Vict. c. 49; Summary Jurisdiction Act, 1879.)

44. An Act to amend the Law respecting the Payment of Naval and Greenwich Hospital Pensions.

(Preamble recites Acts relating to Naval Pensions, &c.
Amends 28 & 29 Vict. c. 73; Naval and Marine Pay and Pensions Act, 1865.
,, 28 & 29 Vict. c. 89; Greenwich Hospital Act, 1865.
Repeals (so far as it relates to Greenwich out-pensioners) 19 & 20 Vict. c. 15; Greenwich and Chelsea Out-Pensioners.
Applies 28 & 29 Vict. cc. 73, 111, and 124, to Greenwich Hospital pensions.)

45. An Act to amend the National School Teachers (Ireland) Act, 1879, in so far as it relates to the Loans for Teachers' Residences.

(Amends 42 & 43 Vict. c. 74; National School Teachers (Ireland) Act, 1879.)

46. An Act to amend the Naval Enlistment Act, 1853, and for other purposes connected therewith.

(Amends 16 & 17 Vict. c. 69; Naval Enlistment Act, 1853.
Construes Act with Naval Enlistment Acts, 1835 and 1853.
Extends to Marines ss. 16 and 21 of 16 and 17 Vict. c. 73; Naval Coast Volunteers.
Applies s. 91 of 44 & 45 Vict. c. 58 (Army Act, 1881).)

*47. An Act to enable Local Authorities to transfer the whole or certain parts of their Districts for the purposes of the Contagious Diseases (Animals) Act, 1878, to the Districts of neighbouring Local Authorities.

(Amends 41 & 42 Vict. c. 74; Contagious Diseases (Animals) Act, 1878.)

48. An Act to promote the Cultivation of Oysters in Ireland.

(Extends powers of Inspectors of Irish Fisheries, under 32 & 33 Vict. c. 92 (Fisheries (Ireland) Act, 1869), to grant licences for forming or planting oyster beds or layings.
Applies 7 & 8 Vict. c. 108; Fisheries (Ireland) Act, 1844.
Extends Act to mussels.)

49. An Act to grant Money for the purpose of Loans by the Public Works Loan Commissioners and the Commissioners of Public Works in Ireland and of loans and purchases by the Irish Land Commission.

(Grants £3,000,000 for Public Works Loans, and £1,200,000 for Public Works Loans in Ireland.
Grants £500,000 to Irish Land Commission under 44 & 45 Vict. c. 49; Land Law (Ireland) Act, 1881, and under 46 & 47 Vict. c. 43; Tramways and Public Companies (Ireland) Act, 1883.
Applies 38 & 39 Vict. c. 89; 42 & 43 Vict. c. 77; } Public Works Loans Acts, 1875 and 1879.
,, 40 & 41 Vict. c. 27; Public Works Loans (Ireland) Act, 1877.)

50. An Act further to amend the Acts relating to the raising of Money by the Metropolitan Board of Works; and for other purposes.

(Amends and applies 46 & 47 Vict. c. 27; Metropolitan Board of Works (Money) Act, 1883.
,, and applies 32 & 33 Vict. c. 102; Metropolitan Board of Works (Loan) Act, 1869.
,, Acts regulating the sale of superfluous lands by the Boards.
Construes Act with Metropolitan Board of Works (Loans) Acts, 1869 to 1871, and Metropolitan Board of Works (Money) Acts, 1875 to 1883.

Applies Main Drainage Acts.
,, 18 & 19 Vict. c. 120; Metropolis Management Act, 1855.
Empowers Board to expend moneys for purposes described in First Schedule.)

*51. An Act to remove doubts as to the powers of the Secretary of State in relation to the altering, enlarging, rebuilding, and building of Prisons, and appropriating any Building for a Prison.

(Removes doubts as to powers of Secretary of State in relation to altering, &c., of Prisons, under 40 & 41 Vict. c. 21; Prison Act, 1877.
Repeals sections 23 to 29 of 28 & 29 Vict. c. 126; Prison Act, 1865.)

52. An Act to continue certain Turnpike Acts, and to repeal certain other Turnpike Acts; and for other purposes connected therewith.

(Continues certain Turnpike Acts, and repeals certain other Turnpike Acts, as set forth in Schedules 1 to 6.
Applies 23 & 24 Vict. c. 51; 40 & 41 Vict. c. 66; } Local Taxation Returns Acts, 1860 and 1877.
,, 38 & 39 Vict. c. 83; Local Loans Acts, 1875.
,, 41 & 42 Vict. c. 77; Highways and Locomotives (Amendment) Act, 1878.

53. An Act to continue various expiring Laws.

(Continues (as specified in Schedule) the following Acts, and enactments amending the same, viz.:—
5 & 6 Will. 4, c. 27; Linen, &c., Manufactures (Ireland).
3 & 4 Vict. c. 89; Poor Rates (Stock in Trade Exemption).
4 & 5 Vict. c. 35; Copyhold, Inclosure, and Tithe Commissioners (now Land Commissioners).
4 & 5 Vict. c. 59; Application of Highway Rates to Turnpike Roads.
10 & 11 Vict. c. 32; Landed Property Improvement (Ireland).
10 & 11 Vict. c. 98; Ecclesiastical Jurisdiction.
11 & 12 Vict. c. 32; County Cess (Ireland).
14 & 15 Vict. c. 104; Episcopal and Capitular Estates Management.
17 & 18 Vict. c. 102; Corrupt Practices Prevention.
23 & 24 Vict. c. 19; Dwellings for Labouring Classes (Ireland).
24 & 25 Vict. c. 109; Salmon Fishery (England).
26 & 27 Vict. c. 105; Promissory Notes.
27 & 28 Vict. c. 20; Promissory Notes, &c. (Ireland).
28 & 29 Vict. c. 46; Militia Ballots Suspension.
28 & 29 Vict. c. 83; Locomotives on Roads.
29 & 30 Vict. c 52; Prosecution Expenses.
31 & 32 Vict. c. 125; Parliamentary Elections.
32 & 33 Vict. c. 21; Election Commissioners' Expenses.
32 & 33 Vict. c. 56; Endowed Schools (Schemes).
34 & 35 Vict. c. 87; Sunday Observance Prosecutions.
35 & 36 Vict. c. 33; Parliamentary and Municipal Elections (Ballot).
36 & 37 Vict. c. 48; Regulation of Railways.
38 & 39 Vict. c. 48; Police Expenses.
38 & 39 Vict. c. 84; Returning Officers' Expenses.
39 & 40 Vict. c. 21; Juries (Ireland).
41 & 42 Vict. c. 41; Returning Officers' Expenses (Scotland).
41 & 42 Vict. c. 72; Sale of Liquors on Sunday (Ireland).
43 Vict. c. 18; Parliamentary Elections.
46 & 47 Vict. c. 35; Diseases Prevention, Metropolis.
46 & 47 Vict. c. 51; Corrupt and Illegal Practices Prevention.

54. An Act to consolidate and amend the law relating to the Registration of Deeds and other matters affecting lands and hereditaments within the North, East, and West Ridings of the County of York.

(Repeals (with proviso) the following Acts:—
2 & 3 Anne, c. 4; Registration of Deeds, &c. (W. R. York).
6 Anne, c. 20; Inrolments of Bargains and Sales (W. R. York).
6 Anne, c. 62; Registration of Deeds, &c. (E. R. York, &c.)
8 George 2, c. 6; Registration of Deeds, &c. (N. R. York).
Applies 44 & 45 Vict. c. 41; Conveyancing and Law of Property Act, 1881.
,, Inclosure Acts, 1845 to 1876.
,, 27 & 28 Vict. c. 114; Improvement of Land Act, 1864.

Applies 45 & 46 Vict. c. 50; Municipal Corporations Act, 1882.)

55. An Act to make further provision with regard to the Pensions of Soldiers, and to the Pay and Pensions of the Yeomanry, and for other purposes.

(Repeals (with proviso) the following:—
44 Geo. 3, c. 54 in part; Yeomanry and Volunteers (Great Britain).
53 Geo. 3, c. 51; Relief of Widows of Military Officers from Stamp Duties on receipt of Pensions in Ireland.
7 Geo. 4, c. 58, s. 4; Yeomanry Cavalry and Volunteers (Great Britain).
19 & 20 Vict. c. 15; Payment of Greenwich and Chelsea Out-Pensioners.
31 & 32 Vict. c. 90, s. 2; Payments by Public Departments.
Removes doubts respecting recovery of certain penalties and sums of money under 44 Geo. 3, 54; Yeomanry Act, 1804.
Applies 44 & 45 Vict. c. 58; Army Act, 1881.
" in England, Summary Jurisdiction Acts, 42 & 43 Vict. c. 49, &c.
" in Scotland, 27 & 28 Vict. c. 53, and 44 & 45 Vict. c. 33; Summary Jurisdiction (Scotland) Acts, 1864 and 1881.)

*56. An Act to declare the Law relating to the Incorporation of Chartered Companies.

(Declares the law relating to the Incorporation of Chartered Companies under 1 Vict. c. 73.)

57. An Act to extend certain Powers given by the Superannuation Act Amendment Act, 1873.

(Extends certain powers of Superannuation Act Amendment Act, 1873 (36 & 37 Vict. c. 23).
Applies 22 Vict. c. 26; Superannuation Act, 1859.)

*58. An Act for amending the Prosecution of Offences Act, 1879.

(Amends 42 & 43 Vict. c. 22; Prosecution of Offences Act, 1879.
Extends 39 & 40 Vict. c. 18; Treasury Solicitor Act, 1876.)

59. An Act to enable sanitary authorities in Ireland to take possession of land for the erection of temporary Cholera Hospitals.

(Enables sanitary authorities in Ireland to take possession of land for the erection of temporary Cholera Hospitals.)

60. An Act to enable the Managers of the Metropolitan Asylums District to borrow for certain purposes of the Diseases Prevention (Metropolis) Act, 1883.

(Enables the Managers of the Metropolitan Asylums District to borrow for certain purposes of the Diseases Prevention (Metropolis) Act, 1883 (46 & 47 Vict. c. 35).
Applies 30 & 31 Vict. c. 6; Metropolitan Poor Act, 1867.)

*61. An Act to amend the Supreme Court of Judicature Acts; and for other purposes.

(Amends Supreme Court of Judicature Acts (36 & 37 Vict. c. 66, &c.)
" 17 & 18 Vict. c. 34; Attendance of Witnesses.
" 39 & 40 Vict. c. 59; Appellate Jurisdiction Act, 1876.
" and applies 17 & 18 Vict. c. 125; Common Law Procedure Act, 1854.
" and extends 42 & 43 Vict. c. 78; Supreme Court of Judicature (Officers) Act, 1879.
Extends 13 & 14 Vict. c. 25; Justices of Assize.
" 18 & 19 Vict. c. 134; Court of Chancery, &c.
" and applies 36 & 37 Vict. c. 66; Supreme Court of Judicature Act, 1873.
Applies 4 & 5 Will. 4, c. 24; Pensions, Civil Officers.
" 22 Vict. c. 26; Superannuation.
" 44 & 45 Vict. c. 68; Supreme Court of Judicature Act, 1881.)

62. An Act to amend the Law relating to the Customs and Inland Revenue and to the Audit of Public Accounts, and for other purposes connected with the Public Revenue and Expenditure.

(Amends the Law relating to the Customs and Inland Revenue and to the Audit of Public Accounts.
Repeals s. 111 and part of s. 142 of 39 & 40 Vict. c. 36; Customs Consolidation Act, 1876.
Amends and applies 43 & 44 Vict. c. 19; Taxes Management Act, 1880.
" 30 & 31 Vict. c. 23; Customs and Inland Revenue Act, 1867.
" 33 & 34 Vict. c. 97; Stamp Act, 1870.
" 29 & 30 Vict. c. 39; Exchequer and Audit Departments Act, 1866.
Construes Part I of Act with Customs Consolidation Act, 1876, and Part I of Revenue Act, 1883 (46 & 47 Vict. c. 55).)

63. An Act to amend the Trusts (Scotland) Act, 1867.

(Amends, extends, and construes Act with 24 & 25 Vict. c. 84; 26 & 27 Vict. c. 115; and 30 & 31 Vict. c. 97; Trusts (Scotland) Acts.
Applies 30 & 31 Vict. c. 132; Trust Funds Act, 1867.)

*64. An Act to consolidate and amend the Law relating to Criminal Lunatics.

(Repeals (in whole or in part) the following Acts:—
3 & 4 Vict. c. 54; Confinement and Maintenance of Insane Prisoners.
6 & 7 Vict. c. 26, s. 21; Millbank Prison.
16 & 17 Vict. c. 96, s. 38 in part; Care and Treatment of Lunatics.
23 & 24 Vict. c. 75, in part; Criminal Lunatic Asylums.
25 & 26 Vict. c. 86, s. 15; Lunacy Regulation Act, 1862.
27 & 28 Vict. c. 29; Confinement and Maintenance of Insane Prisoners.
29 & 30 Vict. c. 109, in part; Naval Discipline Act, 1866.
30 & 31 Vict. c. 12; Criminal Lunatics Act, 1867.
32 & 33 Vict. c. 78; Criminal Lunatics Act, 1869.
44 & 45 Vict. c. 58, in part; Army Act, 1881.
46 & 47 Vict. c. 38, in part; Trial of Lunatics Act, 1883.
Applies 8 & 9 Vict. c. 100; Lunacy Act, 1845.
" 16 & 17 Vict. c. 97; Lunatic Asylums Act, 1853.
" 23 & 24 Vict. c. 75; Criminal Lunatic Asylums Act, 1860.
" 25 & 26 Vict. c. 54; Lunacy (Scotland) Act, 1862.
" 25 & 26 Vict. c. 86; Lunacy Regulation Act, 1862.
" 38 & 39 Vict. c. 67; Lunatic Asylums (Ireland) Act, 1875.

*65. An Act to further amend the New Parishes Acts and the Church Building Acts.

(Amends New Parishes Acts, viz., 6 & 7 Vict. c. 37; 7 & 8 Vict. c. 94; 19 & 20 Vict. c. 104; 32 & 33 Vict. c. 94.
Amends Church Building Acts, viz., 58 Geo. 3, c. 45; 59 Geo. 3, c. 134; 3 Geo. 4, c. 72; 5 Geo. 4, c. 103; 7 & 8 Geo. 4, c. 72; 1 & 2 Will. 4, c. 38; 2 & 3 Will. 4, c. 61; 1 & 2 Vict. c. 107; 2 & 3 Vict. c. 49; 3 & 4 Vict. c. 60; 7 & 8 Vict. c. 56; 8 & 9 Vict. c. 70; 9 & 10 Vict. c. 68; 11 & 12 Vict. c. 37; 14 & 15 Vict. c. 97; 17 & 18 Vict. c. 32; 19 & 20 Vict. c. 55; 32 & 33 Vict. c. 94.)

*66. An Act to provide for the disunion of the Sees of Gloucester and Bristol, and a constitution of a separate Bishopric of Bristol.

(Provides for the disunion of the Sees of Gloucester and Bristol.
Applies 41 & 42 Vict. c. 68; Bishoprics Act, 1878).

*67. An Act to prohibit charges for Improvements upon Ecclesiastical Lands otherwise than with the consent of the Patron and Bishop.

(Applies 27 & 28 Vict. c. 114; Improvement of Land Act, 1864.)

68. An Act to amend the Matrimonial Causes Acts.

(Amends the Matrimonial Causes Acts with respect to the restitution of conjugal rights.)

69. An Act to make better provision against Cholera and other dangerous Epidemic Diseases.

(Applies 41 & 42 Vict. c. 52; Public Health (Ireland) Act, 1878.
" 46 & 47 Vict. c. 59; Epidemic and other Diseases Prevention Act, 1883.
" Acts for Relief of the Poor in Ireland.)

*70. An Act for the better Prevention of Corrupt and Illegal Practices at Municipal and other Elections.

(Repeals s. 33 of 33 & 34 Vict. c. 75; Elementary Education Act, 1870.
,, in part, and applies 45 & 46 Vict. c. 50; Municipal Corporations, 1882.
Applies 46 & 47 Vict. c. 51; Corrupt and Illegal Practices Prevention, 1883.
,, 14 & 15 Vict. c. 105; Poor Law Amendment Act, 1851.
,, 38 & 39 Vict. c. 55: Public Health Act, 1875.
,, 5 & 6 Vict. c. 57; Poor Law Amendment Act, 1842.

71. An Act to amend the Law respecting the administration of the Personal Estate and the Escheat of the Real Estate of Deceased Persons; and for other purposes.

(Applies 39 & 40 Vict. c. 18; Treasury Solicitor Act, 1876.
,, 15 & 16 Vict. c. 55; Trustee Act Extension.)

*72. An Act for preventing the erection of Buildings on Disused Burial Grounds.

(Prevents the erection of buildings on certain disused burial grounds affected by Orders in Council made in pursuance of 15 & 16 Vict. c. 85; 16 & 17 Vict. c. 134; Burial of the Dead.)

73. An Act to apply a sum out of the Consolidated Fund to the service of the year ending on the 31st March, 1885, and to appropriate the Supplies granted in this session of Parliament.

*74. An Act to amend the Public Health Act, 1875, with respect to the Officers of Local Authorities.

(Amends 38 & 39 Vict. c. 55; Public Health Act, 1875.)

*75. An Act to amend the Canal Boats Act, 1877.

(Amends 40 & 41 Vict. c. 60; Canal Boats Acts, 1877.)

76. An Act to amend the Law with respect to the Protection of the Post Office and to Offences committed in relation to the Post Office.

(Repeals 7 Will. 4, and 1 Vict. c. 36, in part, Post Office (Offences) Act, 1837.
,, 3 & 4 Vict. c. 96, in part, Post Office (Duties) Act, 1840.
,, 38 & 39 Vict. c. 22, s. 10, in part, Post Office Act, 1875.
,, 42 & 43 Vict. c. 49, s. 53, in part, Summary Jurisdiction Act, 1879.
,, 44 & 45 Vict. c. 20, s. 7; Post Office (Land) Act, 1881.
,, 44 & 45 Vict. c. 33, s. 11, in part, Summary Jurisdiction (Scotland), 1881.
Amends 41 & 42 Vict. c. 26: Parliamentary and Municipal Registration Act, 1878.
Applies 32 & 33 Vict. c. 73; Telegraph Act, 1869.
,, 38 & 39 Vict. c. 22; Post Office Act, 1875.
,, 7 Will. 4, and 1 Vict. c. 36, Post Office (Offences) Act, 1837.
,, in England, Summary Jurisdiction Acts, 42 & 43 Vict. c. 49, &c.
,, in Scotland, 27 & 28 Vict. c. 53, 44 & 45 Vict. c. 33; Summary Jurisdiction (Scotland) Acts, 1864 and 1881.
,, in Ireland, 14 & 15 Vict. c. 93: Petty Sessions (Ireland) Act, 1851, &c.
Substitutes 32 & 33 Vict. c. 18, s. 1, in Telegraph Act, 1878, for 31 & 32 Vict. c. 119; s. 33.

77. An Act to amend the Public Health (Ireland) Act, 1878, with reference to Sanitary Districts.

(Amends 41 & 42 Vict. c. 52; Public Health (Ireland) Act, 1878.
Applies 34 & 35 Vict. c. 109; Local Government (Ireland) Act, 1871.)

78. An Act to suspend, on account of Corrupt Practices, the issue during the prorogation of Parliament of writs for the holding of an Election of a Member or Members to serve in the present Parliament for certain cities and boroughs.

(Suspends elections for Boston, Canterbury, Chester, Gloucester, Macclesfield, Oxford, and Sandwich.)

ABSTRACTS OF IMPORTANT ACTS

PASSED IN THE FIFTH SESSION OF THE TWENTY-SECOND PARLIAMENT OF GREAT BRITAIN AND IRELAND.

1. THE CHURCH.

NEW PARISHES ACTS AND CHURCH BUILDING ACTS.

[47 & 48 Victoriæ, cap. 65.—14th August, 1884.]

An Act to further amend the New Parishes Acts and the Church Building Acts.

Section 2 provides that in cases where, under "The New Parishes Acts, 1843, 1844, and 1856," or any of them, a district has been constituted, but a church has not been provided for or allotted to such district, it shall be lawful for the Ecclesiastical Commissioners for England to submit to Her Majesty in Council (with the consent of the bishop of the diocese under his hand) a scheme for the dissolution of such district, and for the reincorporation of its area or parts or part of it in the parish or parishes, or district or districts, out of which it was constituted, or for the addition of its area or parts or part to some other parish or parishes, or district or districts, as the Commissioners may hold to be most expedient. If an endowment has been provided for the district thus dissolved, any scheme under this section is to provide for its return to and revesting in the body or person who supplied it; and the scheme may contain such other incidental or auxiliary provisions as the Commissioners may deem necessary or proper. The draft of any scheme thus made must be delivered or transmitted to every incumbent or minister and patron affected by it; and it is not to be submitted to Her Majesty in Council until after the expiration of one month next after it has been so delivered or transmitted, unless every such incumbent or minister and patron in the meantime consents thereto; and if any person at the time of the ratification of such scheme be the incumbent or minister of the district which it is proposed to dissolve, the scheme is not to have any operation unless and until such person shall have consented thereto, or shall have ceased to be such incumbent or minister. A map or plan showing every alteration of boundaries proposed to be effected by a scheme under this section is to be annexed to the draft scheme, and a copy of the map or plan settled so as to correspond with the provisions of the scheme as ratified is to be registered by the registrar of the diocese, together with any Order of Her Majesty in Council ratifying such scheme, but it is not necessary to publish any such map or plan in the "London Gazette." The power as to alteration of boundaries conferred by "The New Parishes Acts and Church Building Acts Amendment Act, 1869," section 1, is, under section 3, to be applicable, and may be exercised in the case of any district constituted under "The New Parishes Acts, 1843, 1844, and 1856," or any of them,

in which no church shall have been provided and consecrated, as well as in the case of a district which shall have become a new parish for ecclesiastical purposes. Section 4 amends section 18 of 1 & 2 Vict., c. 107, by providing that where, under the Church Building Amendment Act of 1878, a church or chapel has been constituted the parish church of a parish instead of the ancient parish church, and provision has been made under section 18 of the same Act for the maintenance of the ministers and clerks of the respective churches, or either of them, out of the pew rents of either of such churches, it shall be lawful for the Ecclesiastical Commissioners for England from time to time by deed under their common seal, made with the consent of the bishop of the diocese, and of every patron and minister affected thereby, to revoke in whole or part or in any way to alter as they may see fit, the deed or other instrument making such provision. A consent under this section must be testified by writing under the hand of the person giving the same, and attested by at least one witness. Any deed or other instrument making such provision which is revoked or altered by a deed duly made in compliance with this section, is, to the extent of such revocation or alteration, to cease to be in force and become of no effect. By section 5 the Acts specified in the schedule to this Act may together with this Act be collectively cited as "The Church Building Acts, 1818 to 1884."

TRUSTEE CHURCHES IN IRELAND.

[47 Victoriæ, cap. 10.—28th April, 1884.]

An Act to amend "The Irish Church Act, 1869*;" and for other purposes.*

The preamble recites the effect of "The Irish Church Act, 1869," section 70, which exempted from its operation the patronage and right of presentation to any proprietary or district parochial church or endowed chapel of ease which had been endowed out of private funds, and the property in any such church or chapel or the property held for the purposes of or appropriated to the use of the same, and the continuance of the trust relating thereto as originally constituted. Section 1 gives power to the trustees or other governing body of any such church or chapel, by instrument under their hands, to transfer to the representative church body of the Irish Church (with its consent) all or any part of the property vested in them for the purposes of such church or chapel, and the representative church body is then to hold the property upon the trusts for the time being applicable thereto. Section 2 empowers the trustees or governing body of such a church or chapel, by any unanimous resolution, to put an end to any trust now or for the time being subsisting with respect to such church or chapel, and to vest the same and any other property subject to such trust in the representative body, or any other person or persons or body corporate, and to define the future trusts thereof, either by assimilating the same to the regulations affecting other similar property in the same diocese, or in any other manner for the benefit of the said Irish Church which may be sanctioned by the chief legislative authority for the time being of the said church. Section 3 requires such resolutions to be accepted and recorded before they are to be regarded as

valid, and any resolution as to patronage or presentation must have the consent in writing of the patron or patrons. Section 4 declares that these resolutions when recorded are to have the force of law.

IMPROVEMENT OF ECCLESIASTICAL LANDS.

[47 & 48 Victoriæ, cap. 67.—14th August, 1884.]

An Act to prohibit charges for Improvements upon Ecclesiastical Lands otherwise than with the consent of the Patron and Bishop.

The preamble recites the desirability of giving universal application to section 20 of "The Improvement of Land Act, 1864," 27 & 28 Vict., c. 114, under which the Commissioners cannot sanction the incurring of any charge upon land held in right of any church, chapel, or other ecclesiastical benefice, for the improvement of such land, or of so much thereof as is so held, unless and until the patron of the benefice and (in England) the bishop of the diocese shall signify to the Commissioners by writing under their hands their respective consents to such application. Section 1 provides that no improvement of any such land is to be sanctioned, nor shall any charge upon any such land of money expended, or purporting to be expended, for its improvement, whether under any general or local Act, or any contract or agreement, be valid or effectual, either with or without the sanction of the Commissioners, unless and until the patron of the benefice and the bishop of the diocese have respectively signified their consent to it in writing, but nothing in this section is to invalidate or prejudicially affect any charge which may have been validly and effectually made before the passing of this Act. By section 2 the short title of the statute is to be "The Improvement of Lands (Ecclesiastical Benefices) Act, 1884."

DISUSED BURIAL GROUNDS.

[47 & 48 Victoriæ, cap. 72.—14th August, 1884.]

An Act for preventing the erection of Buildings on Disused Burial Grounds.

The preamble, after naming the Acts affecting the burial of the dead in the metropolis, and referring to the Orders in Council made for the discontinuance of burials in certain of the burial grounds in the metropolis and elsewhere, declares it to be expedient that no buildings should be erected on such grounds. Section 1 gives as the short title "The Disused Burial Grounds Act, 1884." Section 2 interprets the term "a disused burial ground," used in the Act, to mean a burial ground in respect of which an Order in Council has been made for the discontinuance of burials therein. Section 3 enacts that after the passing of this Act it shall not be lawful to erect any buildings upon any disused burial ground, except for the purpose of enlarging a church, chapel, meeting-house, or other places of worship; but by section 4 nothing in this Act is to prevent the erection of any building on a disused burial ground for which a faculty has been obtained before the passing of this Act. By section 5 nothing in this Act con-

tained is to apply to any burial ground which has been sold or disposed of under the authority of any Act of Parliament.

NEWCASTLE CATHEDRAL CHAPTER.

[47 & 48 Victoriæ, cap. 33.—28th July, 1884.]

An Act to make provision for the foundation of a Dean and Chapter for the Bishopric of Newcastle, and for the transfer to the Cathedral Church of Newcastle of one of the canonries in the Cathedral Church of Durham, and for the transfer of certain ecclesiastical patronage to the Bishopric and Chapter of Newcastle, and for other purposes connected therewith.

The preamble recites that as under "The Bishopric Act, 1878," provision was made for the establishment of the Bishopric of Newcastle, and for the further establishment of a Dean and Chapter, and as an Order in Council of 18th August, 1882, constituted the Archdeacon of Northumberland an officer of the diocese of Newcastle, it is expedient to transfer the canonry in Durham Cathedral hitherto annexed to the Archdeaconry to the cathedral church of Newcastle. Section 1 gives the short title as "The Newcastle Chapter Act, 1884." Section 2 provides for the transfer to the Dean and Chapter of Newcastle, if founded, and if not, to the Newcastle Chapter Endowment Fund, of the endowment of the Canonry of Durham, except the house attached to it, and subject to the provision in favour of the person who holds the Archdeaconry at the passing of this Act, there is to be paid to the Archdeacon of Northumberland for the time being, out of the income of the endowment so transferred, such annual sum as the Ecclesiastical Commissioners from time to time fix. Section 3 makes provision for the establishment of a Chapter for Newcastle Cathedral.

Whenever the Ecclesiastical Commissioners certify to Her Majesty under their common seal that the net income of the Newcastle Chapter Endowment Fund will provide such minimum income as hereinafter mentioned for a dean (1,000*l.* a year), and not less than four residentiary canons (300*l.* a year each), Her Majesty by Order in Council may found a Dean and Chapter of Newcastle, and constitute them a body corporate, with all the rights and powers of other cathedral Chapters in England, or with such of them as to Her Majesty may seem fit, and may subject them to the jurisdiction of the Bishop of Newcastle as visitor. The Dean and Chapter of Newcastle, and the endowment thereof, are to be deemed for all purposes to be subject to the same laws as the Dean and Chapter of any other bishopric in England and the endowment thereof; and the deanery is to be in the direct patronage of Her Majesty, and every canonry is to be in the patronage of the Bishop of Newcastle for the time being. By section 4 Her Majesty may from time to time by Order in Council make, alter, or revoke statutes for the Dean and Chapter of Newcastle. Section 5 names a net annual income of 1,000*l.* for a dean and 300*l.* for a canon of Newcastle as the minimum amount for the purposes of this Act exclusive of the value of a residence. Section 6 makes provision for the establishment of canons at Newcastle, when the Ecclesiastical Commissioners certify to Her Majesty that the

minimum income named in section 5 is provided, and in the Order in Council establishing such canonry Her Majesty may from time to time define the duties of the canon in the cathedral church and in the administration of the diocese. When the endowment of the Durham Canonry has been transferred, Her Majesty may by Order in Council establish a residentiary canonry in the cathedral church of Newcastle annexed to the archdeaconry of Northumberland, but the duties which the incumbent of the canonry is called upon to perform are not to be such as in the opinion of Her Majesty in Council will interfere with the performance of his duties as Archdeacon of Northumberland. Every canonry established is to be in the patronage of the Bishop of Newcastle, and subject to the provisions of this Act is to be held under the same laws as apply to other canonries. Section 7 describes the Trusts under which the Newcastle Chapter Endowment Fund is to be held, and section 8 enables the Ecclesiastical Commissioners from time to time to submit, for the approval of Her Majesty in Council, a scheme or schemes for carrying out the objects referred to in the previous sections. By section 9, an Order in Council, made in pursuance of this Act, is to have effect as if it were enacted in this Act, and it is to be published in the "London Gazette," and laid before both Houses of Parliament forthwith after it is made, if Parliament be then in session, or if not, within one month after the commencement of the then next session of Parliament. A scheme made in pursuance of this Act is to be of no effect until it has been approved by Order in Council. By section 10 nothing in this Act is to authorise the Ecclesiastical Commissioners to apply any portion of their common fund towards the endowment of the Dean and Chapter of Newcastle, or of any canonry in the cathedral church of Newcastle, save in so far as relates to the endowment of the Canonry of Durham directed by this Act to be transferred to Newcastle. Section 11 provides for the payment out of the estate of a deceased person of subscriptions promised by him for the endowment fund. Section 12 provides for the transfer to the Bishopric of Newcastle and to the Dean and Chapter of Newcastle (with the approval of the Archbishop of York and of the Ecclesiastical Commissioners) of certain benefices in the Diocese of Newcastle belonging to the Bishopric of Carlisle, the Bishopric of Chester, the Bishopric of Manchester, or the Vicarage of Newcastle. Provision is also made for the transfer of the patronage of Bywell St. Peter's, Diocese of Newcastle, from the Dean and Chapter of Durham to the Archdeacon of Northumberland, and of St. Mary-le-Bow, Durham, from the Archdeaconry of Northumberland to the Dean and Chapter of Durham. Section 13 saves the rights of the present holder of the Archdeaconry of Northumberland.

BRISTOL BISHOPRIC.

[47 & 48 Victoriæ, cap. 66.—14th August, 1884.]

An Act to provide for the Disunion of the Sees of Gloucester and Bristol, and the constitution of a separate Bishopric of Bristol.

The preamble recites that by an Order in Council, in pursuance of

6 & 7 Will. 4, c. 77, the Sees of Gloucester and Bristol were united, and that it is now expedient that they should be disunited, and that Bristol should be reconstituted as a separate bishopric with a diocese and cathedral church. Section 1 gives the short title as "The Bishopric of Bristol Act, 1884." Section 2 applies "The Bishoprics Act, 1878," to the Bristol Bishopric as if it were a new bishopric. Section 3 enacts that the Dean and Chapter of Bristol are to be the Dean and Chapter of the Bishopric of Bristol; that after Gloucester and Bristol are disunited, the bishop of the See of Gloucester is to cease to be and to be called Bishop of Gloucester and Bristol, and is to be and be called Bishop of Gloucester, ceasing to possess or exercise rights in the Diocese of Bristol, as now constituted. On the Bishopric of Bristol being constituted, the existing episcopal consistory court of Gloucester is to be the court of the Bishop of Gloucester, and the existing episcopal consistory court of Bristol is to be the court of the Bishop of Bristol. On all future avoidances of the See of Gloucester after the constitution of the Bishopric of Bristol, in pursuance of this Act, the licence for the election of a Bishop of Gloucester is to issue to the Dean and Chapter of the cathedral church of Gloucester. The same section empowers Her Majesty in the Order in Council constituting the Bishopric of Bristol, or in any other Order in Council, to insert such provisions as may seem requisite for the purpose of effecting the purpose of this Act; and such provisions are to have the same force as if enacted in this Act. In the schedule the limits of the diocese are mentioned, and it is set forth that the cathedral church of Bristol is to be the cathedral church; that, subject to the rights enjoyed by any person at the passing of this Act, there is to be transferred to the endowment fund of the Bishopric of Bristol, such portion of the endowment or income of the Bishopric of Gloucester as would, if no deduction were made for first-fruits and tenths, yield a net annual sum of 500*l*., but such transfer shall be subject to the payment by the Bishop of Bristol of a proportionate part of the first-fruits and tenths payable by the Bishop of Gloucester; and that the Bishop of Bristol is to be subject to the metropolitan jurisdiction of the Archbishop of Canterbury.

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2. THE ROYAL NAVY.

NAVAL DISCIPLINE.

[47 & 48 Victoriæ, cap. 39.—28th July, 1884.]

An Act to amend "The Naval Discipline Act, 1866."

Section 1 amends Part III of the Naval Discipline Act, 29 & 30 Vict. c. 100, sect. 56, by providing that any offence not capital and not committed by an officer, may, under such regulations as the Admiralty from time to time issue, be summarily tried and punished by the officer in command of the ship to which the offender belongs at the time either of the commission or of the trial of the offence, but

the commanding officer is not to have power to award penal servitude or to award imprisonment for more than three months. When a tender is absent from a ship, the officer in command of the tender may exercise the powers here given to the commanding officer as respects persons on board the tender, and the same rule is to apply as respects persons on board any boat or boats absent on detached service, when the officer in command of the boat or boats is to exercise the power. The rule further applies to parties on detached service on shore, or such of them as are not for the time being made subject to military law by an order under section 179 of "The Army Act, 1881," and the authority is in this case to be exercised by the officer in immediate command on shore of those persons. Section 2 amends Part IV of the Act of 1866 by altering the number of Her Majesty's ships which must be present together at the time when a court-martial is held from three to two, and it is also provided that no court-martial for the trial of a person below the rank of captain in Her Majesty's navy shall be duly constituted unless the president is a captain or of higher rank, nor if the person to be tried is of the rank of commander, unless, in addition to the president, two other members of the court are of the rank of commander or of higher rank. Section 3 amends Part V of the Act of 1866, and provides that a sentence or commutation of a sentence to penal servitude by a court-martial is to have the same effect as the same sentence in a civil court, and the rules which would apply in the latter case are to apply in the former, the order of the Admiralty or of the Commander-in-Chief, or of the officer ordering the court-martial by whom such person was convicted, being a sufficient warrant for the transfer of the said person to prison to undergo his sentence according to law, and, until he reaches such prison, for his detention in naval custody or in any civil prison or place of confinement. Section 4 amends section 73 of the Naval Discipline Act, by providing that nothing in that section is to cause a person to undergo imprisonment for any period exceeding two consecutive years, and so much of any term of imprisonment imposed on a person by a sentence in pursuance of this section as would prolong his imprisonment beyond that period is to be deemed to be remitted. Section 5 amends section 74 of the principal Act as to the commencement of a term of imprisonment, by providing that in cases where by reason of a ship being at sea or off a place at which there is no proper prison, a sentence of imprisonment cannot be duly executed, then the prisoner may be sent with all reasonable speed to some place at which there is a proper prison, and on arrival there he is to undergo his sentence, as if the date of his arrival were the day on which the sentence was awarded, and that notwithstanding that in the meanwhile he has returned to his duty or become entitled to his discharge; and the term of imprisonment is to be reckoned accordingly, subject, however, to the deduction of any time during which he has been kept in confinement in respect of the sentence. In all cases the order of the Admiralty or of the Commander-in-Chief, or of the officer ordering the court-martial, or of the commanding officer of a ship, is to be a sufficient warrant for the sending of a person sentenced by them to the place of imprisonment, there to undergo his sentence according to law, and until he reaches it, for his detention in naval custody, or in any civil prison or place of confinement. Section 6

amends section 81 of the principal Act by providing that the Admiralty shall have the same power and authority in respect to naval prisons as one of Her Majesty's Principal Secretaries of State has in relation to military prisons under section 133 of "The Army Act, 1881." Section 7 contains some supplementary provisions. Section 8 gives the short title as "The Naval Discipline Act, 1884." Section 9 names six months from the date of its passing, or any earlier date fixed by the Admiralty as the time for its commencement, and gives the Admiralty power to fix different dates for different times and places for its commencement.

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3. TRADE AND COMMERCE.

LONDON BROKERS.

[47 Victoriæ, cap. 3.—24th March, 1884.]

An Act for the Relief of the Brokers of the City of London.

In a long preamble the provisions of the various statutes relating to the admission of brokers in the city of London are set forth. Section 1 gives the short title of the present statute as "The London Brokers Relief Act, 1884." Section 2 enacts that after the 29th September, 1886, it is no longer to be necessary for any person to be admitted by the court of mayor and aldermen to act as a broker within the city of London and the liberties thereof, and brokers so acting are not after that day to be liable to pay to the chamberlain of the said city the yearly or other sums of 40*s.* and 3*l.* respectively, which they were required to pay by the before-recited Acts or some or one of them, or any other sum or sums of money whatsoever, anything in the said Acts or in any of them to the contrary notwithstanding. Section 2 repeals from 29th September, 1886, so much of section 2 of the 57 of Geo. III as imposes a penalty of 100*l.* on any person acting as a broker, or employing or causing or permitting or suffering any person or persons to be employed in the city and liberties of London, not being admitted in pursuance of the 6 Anne. Section 4 repeals section 6 of the Act of "The London Brokers Relief Act, 1870," from 29th September, 1886.

CHARTERED COMPANIES.

[47 & 48 Victoriæ, cap. 56.—14th August, 1884.]

An Act to declare the Law relating to the Incorporation of Chartered Companies.

The preamble, after quoting 1 Vict. c. 73, which enables Her Majesty, her heirs and successors, to confer certain powers and immunities on trading and other companies by granting charters of incorporation which might be limited to any term or number of years, or for any other period, recites that as with a view of preventing the cessation of such privileges, supplemental charters and warrants and

documents under the sign manual of Her Majesty have from time to time been granted, it is expedient to remove doubts with respect to such charters, warrants, and other documents. Section 1 declares that the enactment in section 29 of 1 Vict. c. 73 shall be construed as from the date thereof to have authorised Her Majesty, by charter or by warrant or other writing under her sign manual, to extend or renew conditionally or unconditionally any term or number of years or other period for which any charter of incorporation granted by Her Majesty, or any privileges of such charter, may for the time being be limited to endure.

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4. LOCAL GOVERNMENT.

CANAL BOATS.

[47 & 48 Victoriæ, cap. 75.—14th August, 1884.]

An Act to amend "The Canal Boats Act, 1877."

The preamble declares it to be expedient to amend "The Canal Boats Act, 1877" (40 & 41 Vict. c. 60), in this Act referred to as the principal Act. Section 1 provides that a certificate of registration granted under the principal Act is voided if any structural alterations are made in the boat affecting the conditions upon which the certificate was obtained. Section 2 prescribes the penalty for contravention of regulations made or to be made by the Local Government Board and Education Department under the principal Act or this Act. The master of the boat with respect to which the default is made, and also the owner of the boat, if in default, shall for each default be liable on summary conviction to a fine not exceeding 20*s*. Section 3 provides for the enforcement of the Act by every registration or sanitary authority within whose district any canal or any part of a canal is situate, and every such authority is within twenty-one days after the 31st December in each year to make a report to the Local Government Board as to the execution of the principal Act and this Act, and of the regulations made thereunder as to the steps taken by such authority during the year to give effect to the provisions of the Acts and regulations. Section 4 requires the Local Government Board every year to present a report to both Houses of Parliament as to the execution of the principal Act and this Act, and the observance of the regulations made by them thereunder; and it is to cause inquiries to be made from time to time by an inspector or inspectors to be appointed by them for that purpose. These inspectors are, for the purpose of any inquiry under this Act, to have, in relation to witnesses and their examination, the production of papers, and inspection of places and matters, similar powers to those which poor law inspectors have under the Acts relating to the relief of the poor for the purposes of those Acts, and they may enter any canal boat at any time by day, and

examine the same and every part thereof, and may, if need be, for the purpose of such inquiry detain the boat, but for no longer time than is necessary. The master of the boat is, if required by the inspector, to produce to him the certificate of registry, if any, of the boat, and to permit him to examine and copy it, and is to furnish him with such assistance and means as he may require for the purpose of his entry and examination of and departure from the boat in pursuance of this section. A refusal to comply with the requisition of the inspector under this section is to be deemed to be an obstruction of such inspector, and is to render the obstructor liable to a fine not exceeding 40*s*. Section 5 extends the power to make regulations given to the Local Government Board by the principal Act and this Act, so as to include power to the Education Department to make regulations with respect to the form of certificates or pass books as to attendance at school to be used by children in canal boats. Section 6 requires the Education Department every year to report to Parliament as to the manner in which the Elementary Education Acts, 1870 and 1873, 1876 and 1880, are enforced with respect to children in canal boats, and for that purpose the department is to direct Her Majesty's inspector of schools to communicate with the school boards and school attendance committees in their district. By section 7 a canal boat is not to be deemed to be lettered, marked, and numbered in conformity with section 3 of the principal Act, unless it is so lettered, marked, and numbered on both sides of the boat, or in some suitable position on the stern, so that the lettering, marking, and numbering may be plainly visible from both sides of the canal whereon the boat may be. Section 8 provides that every fine recovered under the principal Act or this Act is to be paid in the case of a prosecution by any registration or sanitary authority or person authorised by them to such authority, either directly or through the person representing it, and it is to be applied towards the expenses of executing the principal Act and this Act, any Act to the contrary notwithstanding. Section 9 defines the expression "by day" in the principal Act and this Act as including the hours between six in the morning and nine at night. Section 10 amends the definition of canal boat in the principal Act, and provides that if at any time it appears to the Local Government Board, on the representation of any registration or sanitary authority or of any inspector appointed under this Act, that the two Acts ought to apply to any vessel or class of vessels which would be within the definition of canal boat contained in section 14 of the principal Act, if such vessel or class of vessels were not registered under "The Merchant Shipping Act, 1854," and the connected Acts, then the Local Government Board may declare that the principal Act and this Act are to apply to such vessel or class of vessels, and they are thenceforth to be deemed to be a canal boat or canal boats within the meaning of the principal Act and this Act. Section 11 gives the short title as "The Canal Boats Act, 1884," and provides that it is to be construed as one with "The Canal Boats Act, 1877," which Act and this Act may be cited together as "The Canal Boats Acts, 1877 and 1884."

METROPOLIS VALUATION.

[47 Victoriæ, cap. 5.—28th March, 1884.]

An Act to amend "The Valuation (Metropolis) Act, 1869," by giving greater facilities for appeal to owners and lessees of houses paying rates and taxes in the place of the occupiers.

The preamble recites that "The Valuation (Metropolis) Act, 1869," does not sufficiently provide for objections to and appeals against valuation lists in the case of owners and lessees who by contract or arrangement pay tenants' rates and taxes, more especially when such houses are subdivided into tenements separately rated as hereditaments in such valuation lists. Section 1 gives the short title as "The Valuation (Metropolis) Amendment Act, 1884," and provides that it shall be read and construed as one Act with "The Valuation (Metropolis) Act, 1869" (hereinafter called the principal Act). Section 2 repeals section 70 of the principal Act, and provides that where the owner or lessee of any hereditament is liable to be assessed for any rate or tax in the place of the occupier or tenant, or does in fact pay any such rate or tax in his place under any contract or arrangement with him, such owner or lessee shall for the purposes of this Act and the Acts incorporated with it, be deemed to be the occupier of the hereditament, and the person referred to as the ratepayer in sections 19 and 22 of the principal Act, and the person who is to make to the overseers of his parish the statement or return referred to in section 55 of the principal Act. As regards the giving or serving of returns, orders, notices, or documents required under the principal Act, they are to be deemed sufficiently given or served if addressed to the occupier or left on the premises, except where the owner or lessee is liable to be assessed to or to pay any rate or tax in the place of the occupier. By section 3 one notice or objection by any occupier or ratepayer, or any owner or lessee deemed to be an occupier or ratepayer within the meaning of section 2 of this Act, may include one or more separately assessed hereditaments.

PUBLIC LIBRARIES.

[47 & 48 Victoriæ, cap. 37.—28th July, 1884.]

An Act to amend the Public Libraries Act.

Section 1, in order to resolve doubts whether authorities acting under the Public Libraries Acts have power to fulfil the conditions required for a Parliamentary grant in aid of the establishment of a school of science and art, enacts that when any such authority accepts a grant from any Committee of the Privy Council on Education towards the purchase of the site, or the erection, enlargement, or repair of any science and art school, or for the residence of a teacher in such school, or towards the furnishing of such school, it shall have power to accept the grant upon the conditions prescribed by the Privy Council Committee, and to execute such instruments as may be required for carrying the conditions into effect; and upon payment of the grant the authority, together with its successors, is to be bound by the conditions and instrument. Section 2 enacts that under

"The Public Libraries Acts (England and Ireland, 1855, and Scotland, 1867)" the sections providing for the erection of buildings shall include buildings for public libraries, public museums, schools for science, art galleries, and schools for art, or for any one or more of those objects. Section 3 gives power to establish a library, museum, or school for science or art in connection with any one of these institutions which may have been previously established. Among the definitions in section 4 is one of the expression "authority acting under the Public Libraries Acts," which means the council, board, magistrates, or commissioners, acting in execution of the said Public Libraries Acts. The short title by section 5 is "The Public Libraries Act, 1884," and with the earlier Acts it may be cited as "The Public Libraries (England) Acts, 1855 to 1884."

HOURS OF POLLING AT PARLIAMENTARY AND MUNICIPAL ELECTIONS.

[47 & 48 Victoriæ, cap. 34.—28th July, 1884.]

An Act to extend the Hours of Polling at Parliamentary and Municipal Elections in certain Boroughs.

Section 1 provides that in parliamentary boroughs with more than 3,000 electors the poll (if any) shall commence at 8 A.M., and be kept open until 8 P.M. of the same day, and no longer. The same rule is to apply to municipal elections of a councillor, commissioner of police, auditor, or revising assessor in any municipal borough, or in any ward thereof, where the whole or part of the area of such borough is co-extensive with, or included in the area of a parliamentary borough with upwards of 3,000 electors. Section 2 supplies definitions.

CATTLE DISEASE.

[47 and 48 Victoriæ, cap. 47.—7th August, 1884.]

An Act to enable Local Authorities to transfer the whole or certain parts of their Districts for the purposes of "The Contagious Diseases (Animals) Act, 1878," to the Districts of neighbouring Local Authorities.

Section 1 provides for the Act to be cited as "The Contagious Diseases (Animals) Transfer of Parts of Districts Act, 1884," and for its construction as one with "The Contagious Diseases (Animals) Act, 1878." By section 2 in cases where the whole or any part of the district within which any local authority exercises jurisdiction under the provisions of "The Contagious Diseases (Animals) Act, 1878," or any Order of Council under that Act, is wholly surrounded by or has a common boundary with the district within which any other local authority exercises the like jurisdiction, the two local authorities may, by agreement in writing between themselves, make, and from time to time vary and rescind, provisions for the exercise by one of them as the administering authority of jurisdiction under the Act or order within the whole or any part or parts of the district of the other. The proportion of the expenses of the administering authority to be

paid by the surrendering authority is to be fixed with reference to the rateable value of the part of the district of the surrendering authority surrendered to the administering authority as compared with the rateable value of the original area of the district of the administering authority. The district surrendered is for purposes of jurisdiction to be deemed to be part of the district of the administering authority. Section 3 enables local authorities to form a joint committee to work a united district, the said committee having full legal power as if it were a local authority within the meaning of the Act. All expenses incurred by the joint committee are to be apportioned among the component areas belonging to the different constituent authorities in proportion to the rateable values of such areas, and paid out of the rates or funds out of which such expenses would have been paid if they had been incurred by the constituent authorities themselves. Under section 4 any agreement made by a local authority under this Act is to be binding so far as respects such authority if executed by the chairman for the time being of the local authority and two other members of such authority, or, where such authority is a corporation, if executed under the corporate seal, but no such agreement is to be valid unless it has been approved by the Privy Council. By section 5 the expression "jurisdiction" is not to include the power of making or levying a rate, but is to include all other powers, duties, and obligations exercisable by or imposed on a local authority or its officers under "The Contagious Diseases (Animals) Act, 1878," or any Order of Council from time to time enforced by virtue of such Act. Sections 6 and 7 provide for the application of the Act to Scotland and Ireland.

BYE-LAWS ON PUBLIC HEALTH.

[47 Victoriæ, cap. 12.—19th May, 1884.]

An Act to amend "The Public Health Act, 1875," so far as relates to the Confirmation of Bye-Laws.

This Act, which is to be construed as one with "The Public Health Act, 1875," enacts by its 3rd section that every bye-law made or to be made under any of the incorporated enactments by reason of the incorporation thereof with "The Public Health Act, 1848," "The Local Government Act, 1858," or "The Public Health Act, 1875," or any local Act, or any provisional order, or any Act confirming such provisional order, and every rule and regulation made or to be made by an urban authority under section 48 of "The Tramways Act, 1870," are to be deemed to have required or to require the confirmation of the confirming authority, and not to have required or to require any other confirmation, allowance, or approval. Section 4 consists of a saving clause that this Act is not to invalidate the confirmation, allowance, or approval of any bye-law, rule, or regulation confirmed, allowed, or approved prior to the passing of this Act, nor is it to apply to any bye-law made or to be made under any of the incorporated enactments by reason of the incorporation thereof with any local Act, if such bye-law has or will come into force without any confirmation, allowance, or approval, or if by the express provisions of

the local Act and without reference to the provisions with respect to confirmation, allowance, or approval of bye-laws in any of the incorporated Acts, such bye-law is required to be confirmed, allowed, or approved otherwise than by the confirming authority. The bye-laws to which this Act applies include those made under section 128 of "The Towns Improvement Clauses Act of 1847," sections 68 and 69 of "The Towns Police Clauses Act of 1847," or section 42 of "The Markets and Fairs' Clauses Act of 1847," by reason of the incorporation thereof with "The Public Health Act of 1848 or 1875," "The Local Government Act of 1858," or any local Act or provisional order, and also the regulations made by an urban authority under section 48 of "The Tramways Act of 1870."

RECOVERY OF PENALTIES FROM OFFICERS OF LOCAL AUTHORITIES.

[47 & 48 Victoriæ, cap. 74.—14th August, 1884.]

An Act to amend "The Public Health Act, 1875," with respect to the Officers of Local Authorities.

Under the Public Health Act, section 193, any officer or servant of a local authority is prohibited from having any pecuniary interest in contracts made under the authority of or for the purposes of the Act, and if he is so interested, or accepts fees or rewards, he is liable to a penalty of 50*l.*, recoverable from him by any person. The present statute, by section 2, imposes a restriction on the recovery of the penalties, and makes the Attorney-General's consent in writing necessary to proceedings for this purpose.

CORRUPT PRACTICES AT MUNICIPAL ELECTIONS.

[47 & 48 Victoriæ, cap. 70.—14th August, 1884.]

An Act for the better Prevention of Corrupt and Illegal Practices at Municipal and other Elections.

Section 1 gives the title of the statute as "The Municipal Elections (Corrupt and Illegal Practices) Act, 1884," and section 2 defines the term "corrupt practice" when used in this Act as meaning any of the following offences: treating, undue influence, bribery, and personation as defined by the enactments set forth in the schedule, and aiding, abetting, counselling, and procuring the commission of the offence of personation. Section 2 makes offenders at municipal elections liable to the same punishment and disabilities as offenders at Parliamentary elections. By section 3, on proof before an election court that a candidate has been guilty of, or a consenting party to, any corrupt practice other than treating and undue influence, or that treating or undue influence has been committed by the candidate, he is made incapable of ever holding a corporate office in the said borough, and if he has been elected his election is to be void; and he is further to be subject to the same incapacities as if at the date of the said report of the election court he had been convicted of a corrupt practice. Sections 4 to 8 inclusive describe illegal practices. Sections 9

to 18 set forth what are illegal payments, employment, and hiring. Sections 19 to 21 treat at length of the excuses which will be accepted as exonerating a candidate from charges of corrupt practices. Sections 22 to 25 set forth the penalties imposed on electors found guilty of corrupt practices, among which (section 24) is the inscription of their names in a list which the town clerk in every municipal borough is to make out annually in July, of the names and description of all persons who, though otherwise qualified to be enrolled as burgesses of such borough, have under this Act, or under "The Corrupt and Illegal Practices Prevention Act, 1883," or under any other Act for the time being in force relating to a Parliamentary election or an election to any public office, become after the commencement of this Act, by reason of conviction of a corrupt or illegal practice, or of the report of any election court or election commissioners, incapable of voting at a municipal election in such borough or any ward thereof. The town clerk is to state in the list the offence of which each person has been found guilty. Provision is made in the same section for the consideration of objections made by persons to the insertion of their names in this list and for the expunging of their names from it. Sections 25 to 29 are occupied with the procedure on election petitions, and sections 30 to 37 contain miscellaneous provisions. By section 39 the Act was to come into operation on 1st October, 1884, and by section 41 it is to continue in force until the end of the year 1886, and no longer. Section 40 limits the operation of the Act to England and Wales.

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5. LAW AND JUSTICE.

BANKRUPTCY APPEALS.

[47 Victoriæ, cap. 9.—28th April, 1884.]

An Act to amend the Law as to Appeals in Bankruptcy from County Courts.

Section 1 gives the short title as "The Bankruptcy Appeals (County Courts) Act, 1884." Section 2 repeals section 104, subsection 2 (a), of "The Bankruptcy Act, 1883," which allowed appeals from orders by County Court Judges to Her Majesty's Court of Appeal, and, if the latter court gave leave, a further appeal to the House of Lords. In place it is enacted that any such appeal shall be from the order of a County Court to a Divisional Court of the High Court of Justice, of which the judge to whom bankruptcy business shall for the time being be assigned shall for the purpose of hearing any such appeal be a member. The decision of the Divisional Court upon any such appeal is to be final and conclusive, unless in any case it shall seem fit to the Divisional Court or to the Court of Appeal to give special leave to appeal therefrom to Her Majesty's Court of Appeal, whose decision in such case shall be final and conclusive.

MARRIED WOMEN'S PROPERTY.

[47 & 48 Victoriæ, cap. 14.—23rd June, 1884.]

An Act to amend the sixteenth section of "The Married Women's Property Act, 1882."

By section 16 of "The Married Women's Property Act, 1882," the preamble recites that as a wife is, under the circumstances therein mentioned, declared to be liable to criminal proceedings by her husband, and a doubt has arisen as to whether the husband is admissible as a witness against his wife in such criminal proceedings, while section 12 of the same Act declares that in any proceeding under that section a husband or wife shall be competent to give evidence against each other, it is desirable that the doubt should be removed. It is therefore enacted by section 1, that in any such criminal proceedings against a husband or a wife as is authorised by "The Married Women's Property Act, 1882," the husband and wife respectively shall be competent and admissible witnesses, and, except when defendant, compellable to give evidence. By section 2 the short title of the statute is "The Married Women's Property Act, 1884," and this Act, and "The Married Women's Property Act, 1882," may be cited as "The Married Women's Property Acts, 1882 and 1884."

BUILDING SOCIETY DISPUTES.

[47 & 48 Victoriæ, cap. 41.—7th August, 1884.]

An Act to amend "The Building Societies Act, 1874."

Section 1 provides for the construction of this Act with the Building Societies Acts of 1874, 1875, 1877, as "The Building Societies Acts." Section 2 defines the word "disputes" in the Building Societies Acts, or in the rules of any society thereunder, as referring only to disputes between the society and a member, or any representative of a member in his capacity of a member of the society, unless by the rules for the time being it shall be otherwise expressly provided: and, in the absence of such express provision, it is not to apply to any dispute between any such society and any member thereof, or other person whatever, as to the construction or effect of any mortgage deed, or any contract contained in any document, other than the rules of the society, and it is not to prevent any society, or any member thereof, or any person claiming through or under him, from obtaining in the ordinary course of law any remedy in respect of a mortgage or other contract to which he or the society would otherwise be by law entitled. It is provided also that nothing in this Act is to apply to any dispute pending at any time before its passing between any society and its members or other person, which before the passing of this Act was actually referred, or agreed to be referred, to arbitration, or as to which the jurisdiction of any court of law shall have been adjudged to be excluded by a decision of any court of competent jurisdiction in an action or suit between the society and any member thereof or other person.

OFFICE OF PUBLIC PROSECUTOR.

[47 & 48 Victoriæ, cap. 58.—14th August, 1884.]

An Act for amending "The Prosecution of Offences Act, 1879."

Section 1 fixes the title of the Act as "The Prosecution of Offences Act, 1884," and with the principal Act it may be cited as "The Prosecution of Offences Acts, 1879 and 1884." Section 2 enacts that on and after the passing of this Act, all appointments made in pursuance of the principal Act are revoked, and the person for the time holding the office of the solicitor for the affairs of Her Majesty's Treasury is to be Director of Public Prosecutions, and perform the duties and have the powers of such director. It is also provided that section 3 of "The Treasury Solicitor Act, 1876," shall extend to authorise any assistant solicitor for the affairs of Her Majesty's Treasury to act on behalf of the said solicitor in his capacity of Director of Public Prosecutions. Section 3 requires the chief officer of every police district in England, from time to time, to give to the Director of Public Prosecutions information with respect to indictable offences alleged to have been committed within his district, and to the dealing with those offences, including such particulars and in such form as may be for the time being required by regulations under the principal Act. Section 4 defines the terms "police district" and "chief officer of police."

SUPREME COURT OF JUDICATURE.

[47 & 48 Victoriæ cap. 61.—14th August, 1884.]

An Act to amend the Supreme Court of Judicature Acts; and for other purposes.

Section 1 gives the short title as "The Supreme Court of Judicature Act," and provides for its construction with previous Acts as "The Supreme Court of Judicature Acts, 1873 to 1884." Section 2 fixes October 24, 1884, as the day of its commencement. Section 3 gives the President for the time being of the Probate, Divorce, and Admiralty Division of the High Court of Justice rank and precedence in the Court of Appeal next after all ordinary judges of that court appointed before the time at which he shall have become an ex-officio member thereof. Section 4 amends 39 & 40 Vict. c. 39, s. 17, by providing that a divisional court of the Queen's Bench Division of the High Court of Justice may at any time be constituted of more than two judges if the president of the said division, with the concurrence of not less than two other judges thereof, shall be of opinion that it is expedient so to constitute it. Section 5 enables any judge of any division of the High Court, who may consent so to do, upon the request of the Lord Chancellor, to sit and act for or on behalf of any other judge of the High Court absent from illness or any other cause, or in the place of any judge whose office has become vacant, or as an additional judge of any division for the purpose of hearing any causes or matters which may be assigned to him by the Lord Chancellor, or any applications therein; and while so sitting and acting he is to have all the power and authority which the judge ordinarily sitting would

have had, or which belongs to a judge of such division. No such additional judge is to sit and act in any division, except with the concurrence of the respective presidents of the division to which he belongs, and of the division in which he may have been requested to sit and act; and the assignment to such judge of any causes or matters depending in the division in which he shall so sit and act, shall not be made except with the concurrence of the president of the last-mentioned division. Section 6 gives any judge in the High Court power to hear and decide causes for any other judge of the same division, subject to the consent of the parties to such proceeding, but if an objection is raised the cause shall not be so heard and disposed of without the concurrence of the Lord Chancellor, to be signified by an order in writing under his hand. Section 7 extends to county court judges every qualification conferred on Her Majesty's counsel learned in the law by 13 & 14 Vict., c. 25. Sections 8 to 11 contain provisions relating to appeals from official referees, and sections 12 to 18 inclusive deal with matters of procedure under the Judicature Acts. Section 19 transfers the appointment of officers in the office of master of the Supreme Court, or of clerks in the Central Office, which by section 9 of "The Supreme Court of Judicature (Officers) Act, 1879," was vested, subject to certain conditions, in the Lord Chief Justice of England, the Master of the Rolls, the Lord Chief Justice of the Common Pleas, and the Lord Chief Baron of the Exchequer, in rotation and in such order as they by agreement among themselves might determine, to the Lord Chancellor, the Lord Chief Justice of England, and the Master of the Rolls, in rotation or in such order or manner as they by agreement among themselves may determine. Other provisions relating to the officers of the Supreme Court and circuit officers are dealt with in sections 20 to 22, and sections 23 and 24 refer to the making of rules.

PRISON BUILDINGS.

[47 & 48 Victoriæ, cap. 51.—7th August, 1884.]

An Act to remove doubts as to the powers of the Secretary of State in relation to the altering, enlarging, rebuilding, and building of Prisons, and appropriating any Building for a Prison.

The preamble declares the desirability of removing doubts which have arisen as to the sufficiency of the authority given by "The Prison Act of 1877" to the Secretary of State to sanction the alteration, enlargement, or rebuilding by a prison authority of any of its prisons, and the erection of other prisons in lieu of or in addition to any subsisting prisons, if the necessity so to do was shown. Section 1 provides that this Act may be cited as "The Prison Act, 1884," and may be cited together with the Act of 1877 as "The Prison Acts, 1877 and 1884." Section 2 empowers the Secretary of State, with the approval of the Treasury, to alter, enlarge, or rebuild any prison, and build any new prison which appears to be necessary, and for that purpose he is to have all the powers conferred by "The Prison Act, 1865," for the like purpose on a prison authority who had obtained the sanction of a Secretary of State. The Secretary of State, in lieu of building, may,

by declaration, appropriate as a prison any suitable building or part of a building vested in him or under his control, including any prison for convicts under the superintendence of the directors of convict prisons which is situate in England. He may also from time to time declare that any building or part of a building built for or appropriated as a prison in pursuance of this Act shall, and the same accordingly shall, be a prison under "The Prison Act, 1865," and "The Prison Act, 1877," and be within the jurisdiction of the prison commissioners, and be a prison for the county and prison jurisdiction named in the declaration; such declaration may be at any time revoked by the Secretary of State, but while in force it is to have full effect. Provided that nothing in any such declaration shall alter the legal estate in any building. It is also provided that any act of the Secretary of State done before the passing of this Act, which if done after the passing of this Act would have been valid, shall be as valid as if it had been done in pursuance of this Act. Sections 23 to 29, both inclusive, of "The Prison Act, 1865," are repealed without prejudice to any right acquired or liability incurred under those sections.

CRIMINAL LUNATICS.

[47 & 48 Victoriæ, cap. 64.—14th August, 1884.]

An Act to Consolidate and Amend the Law relating to Criminal Lunatics.

Section 1 gives the short title of the statute as "The Criminal Lunatics Act, 1884." Section 2 provides for the issue of a warrant by the Secretary of State for the removal of any prisoner certified to be insane to a lunatic asylum. A person is to cease to be a criminal lunatic if he is remitted to prison, or absolutely discharged, or if his term of penal servitude or imprisonment determines. When any two members of the visiting justices consider that a prisoner, not being under sentence of death, is insane, they are to call to their assistance two legally qualified medical practitioners, who are to examine and enquire as to his insanity, and if, after examination, they find him to be insane, they are to give certificates to that effect. When a prisoner under sentence of death is considered to be insane, the Secretary of State is to appoint two medical men to examine, report, and, if they find him to be insane, to certify the fact. In the case of convict prisons, the power here given to two members of a visiting committee is to be exercised by the directors, or by one of them; and in the case of a prisoner in any other prison by the Commissioners of Prisons, or one of them; and in the case of any prison not within the jurisdiction of these bodies, the authority is to be exercised by two justices of the county or place where the prison is situate. Section 3 provides that in cases where it is certified by two legally qualified medical practitioners that a person being a criminal lunatic (not being a person with respect to whom a special verdict has been returned that he was guilty of the act or omission charged against him, but was insane at the time when he committed the act or made the omission) is sane, a Secretary of State, if satisfied that it is proper so to do, may

by warrant direct such person to be remitted to prison, to be dealt with according to law. Section 4 requires the superintendent of an asylum or other place in which any criminal lunatic is detained to make a report to the Secretary of State at such times (not being less than once a year) and containing such particulars as the Secretary of State may require, of the condition and circumstances of every criminal lunatic in such asylum or place; and the Secretary of State is, at least once in every three years during which a criminal lunatic is detained in any asylum or other place, to take into consideration the condition, history, and circumstances of such lunatic, and determine whether he ought to be discharged or otherwise dealt with. Where a criminal lunatic is conditionally discharged in pursuance of this Act, a report of his condition is to be made to a Secretary of State by such person at such times and containing such particulars as may be required by the warrant of discharge. Section 5 relates to the transfer and discharge of criminal lunatics. The Secretary of State may order the transfer to any other asylum, or the discharge, absolutely or conditionally, of any criminal lunatic. If a criminal lunatic discharged conditionally breaks any of the conditions on which he was discharged, the Secretary of State may by warrant direct him to be taken into custody, and to be conveyed to some asylum named in the warrant; and he may thereupon be taken in like manner as if he had escaped from such asylum, and he is to be received and detained therein as if he had been removed thereto in pursuance of the foregoing provisions of this Act. Section 6 defines the duty of the superintendent of an asylum on the discharge or expiration of sentence of a criminal lunatic. Unless the superintendent is satisfied that the said person is sane, he is to take all reasonable means for his being placed under the care of some relation or friend, or in some asylum or place for the reception of lunatics. Section 7 deals with the case of a person who ceases to be a criminal lunatic, and becomes a pauper lunatic. Where a person being a criminal lunatic is detained in an asylum or other place, or being a prisoner in any prison, is certified in manner provided by this Act to be insane, but has not been directed by the Secretary of State to be removed to an asylum, and it is made to appear to any justice of the peace having jurisdiction where such asylum, or place, or prison is situate, or being a member of the visiting committee of such prison, by notice in writing, signed by the superintendent of such asylum or place, or by the governor of such prison, either—(*a*) that such person is about to be absolutely discharged, or (*b*) that any term of penal servitude or imprisonment to which such person is subject is about to determine, and that in the opinion of such superintendent or governor such person is insane, and unfit to be at large, the justice is to examine such person, and make any enquiry, and take any medical or other evidence which he may deem necessary respecting him.

The remaining clauses contain provisions as to the detention of persons becoming pauper lunatics, and for the recapture of escaped lunatics, and the punishment of those who aided them to escape.

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6. FINANCE.

CONVERSION OF STOCK.

[47 & 48 Victoriæ, cap. 23.—3rd July, 1884.]

An Act for giving Facilities for the Conversion of Three per Cent. Stock into Stock of a Lower Denomination, and for other purposes relating thereto.

Section 1 provides that, subject to limitations contained in the Act 33 & 34 Vict., c. 71, the Treasury may at any time and from time to time within two years after the passing of this Act, by warrant addressed to the Bank, direct—(*a*) that stock shall be created, consisting of perpetual annuities yielding dividends at the rate of 2*l.* 15*s.* per cent. per annum, which stock may be called 2¾ per cent. stock; and (*b*) that an additional amount of 2½ per cent. stock shall be created; or give either of such directions: provided that the amount of stock so directed to be created shall not be more than the Treasury, on the recommendation of the National Debt Commissioners, from time to time deem sufficient for the purpose of exchange under this Act; that the 2¾ per cent. stock, and 2½ per cent. stock, are not to be redeemable until the 5th January, 1905, but on and after such day they are to be redeemable by Parliament after not less than one month's notice at the rate of 100*l.* sterling for every 100*l.* of the capital sums in respect of which the annuities are payable, together with the payment of all arrears of such annuities, including a proportionate part accrued since the last date for the payment of dividends. The notice is to be a resolution of the House of Commons signified by the Speaker in writing and printed in the "London Gazette;" and the portion of stock redeemed at one time is not to be less, in the case of 2¾ per cent. stock, than 5,000,000*l.* capital stock, and in the case of 2½ per cent. stock, than 14,000,000*l.* capital stock; but, subject as aforesaid, the mode of redemption shall be determined by an Act to be hereafter passed. Under section 4 the 2¾ per cent. stock of annuities are to form part of the National Debt, and to be payable by equal quarterly dividends on the 5th of January, April, July, and October in every year. The annuities created in pursuance of this Act are to be charged on the Consolidated Fund of the United Kingdom, and paid out of the permanent annual charge of the National Debt, and the provisions of "The National Debt Act, 1870," are to apply in the same manner, so far as may be consistently with the tenor of this Act as if the stocks of annuities created in pursuance of this Act were part of the stocks of perpetual annuities described in the first schedule to "The National Debt Act, 1870;" and the 2½ per cent. stock created under this Act are to be consolidated with the 2½ per cent. stock mentioned in the said schedule; and the Treasury may by warrant declare that the 2¾ per cent. stock shall be subject to Part V of the said Act. Section 2 provides for exchange of 3 per cent. stock into 2¾ per cent. or 2½ per cent. stock. Section 3 contains provision for the adjustment of accounts as to the net saving from exchange under the Act, and section 4 makes provision as to meeting the increase of charge arising from the earlier payment of dividends. The remaining sections con-

tain miscellaneous provisions for carrying out the objects defined in the earlier parts of the Act.

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7. MISCELLANEOUS.

THE GREAT SEAL.

[47 & 48 Victoriæ, cap. 30.—28th July, 1884.]

An Act to simplify the passing of Instruments under the Great Seal of the United Kingdom.

Section 1 gives the short title of the statute as "The Great Seal Act, 1884." Section 2 enacts that a warrant under Her Majesty's Royal Sign Manual, countersigned by the Lord Chancellor, or by one of Her Majesty's Principal Secretaries of State, or by the Lord High Treasurer, or two of the Commissioners of Her Majesty's Treasury, shall be a necessary and sufficient authority for passing any instrument under the Great Seal of the United Kingdom, according to the tenor of such warrant, provided that any instrument which may now be passed under the Great Seal by the fiat or under the authority or directions of the Lord Chancellor, or otherwise, without passing through any other office, may continue to be passed as heretofore. The Lord Chancellor is empowered from time to time to make, and when made to revoke and vary, regulations respecting the passing of instruments under the Great Seal of the United Kingdom, and respecting the warrant for that purpose, and every such warrant is to be prepared by the Clerk of the Crown in Chancery. No person is to make or prepare any warrant for passing any instrument under the Great Seal of the United Kingdom, or procure any instrument to be passed under that seal otherwise than in the manner provided by this Act, or "The Crown Office Act, 1877;" and any person who acts in contravention of this section is to be guilty of a misdemeanour. By section 3 it is not to be held necessary that any instrument after the passing of this Act shall be passed under the Privy Seal.

ABSTRACTS OF PARLIAMENTARY AND OTHER OFFICIAL DOCUMENTS.

1. FINANCE, TAXATION, AND CURRENCY.

NATIONAL REVENUE AND EXPENDITURE.—The subjoined tables show the gross PUBLIC REVENUE and EXPENDITURE of the United Kingdom in the year ended 31st March, 1884:—

SOURCES OF REVENUE:—	£
Customs	19,701,000
Excise	26,952,000
Stamps (exclusive of fee, &c., stamps)	11,620,000
Land Tax	1,070,000
House Duty	1,805,000
Property and Income Tax	10,718,000
Post Office	7,730,000
Telegraph Service	1,715,000
Crown Lands (Net)	380,000
Interest on Advances for Local Works, &c., and on Purchase Money of Suez Canal Shares	1,196,128
Miscellaneous (including fee, &c., stamps)	4,288,056
Total Income	£87,205,184
Income for year estimated in Budgets	£86,549,000
Excess of Income over Budget Estimate	£656,184

BRANCHES OF EXPENDITURE:—	
Permanent Charge of Debt:—	£
Interest (except as below) and Management of the Debt	20,312,975
Terminable Annuities	7,854,868
Interest of Exchequer Bills, &c.	121,821
New Sinking Fund	600,172
Trustee Savings Banks, Deficiency Annuity	83,672
Interest, &c., not forming part of the above Permanent Charge, viz.:—	
Interest on Loans for Local Purposes and Sinking Fund	478,137
Interest and Principal of Exchequer Bonds (Suez)	199,856
Other Charges on Consolidated Fund:—	
Civil List	408,714
Annuities and Pensions	380,908
Salaries and Allowances	97,627
Courts of Justice	505,556
Miscellaneous Services (Ordinary)	156,840
,, ,, Localisation of Military Forces	40,000
Voted Supply Services:—	
Army Services (including Army Purchase)	15,910,326
,, ,, Charges on account of Troops in India	1,230,000
Navy Services	10,728,781
Grant to India (Afghan War)	1,000,000
Miscellaneous Civil Services	17,181,934
Customs and Inland Revenue Departments	2,771,749
Post Office	4,507,500
Telegraph Service	1,707,000
Post Office Packet Service	721,100
Total Ordinary Expenditure	£86,999,564
Estimated on Budgets and Supplementary Votes	£87,819,358
Less than Estimates by	819,794

Customs and Excise.—The Produce of the two great sources of Public Revenue, Customs and Excise, which together contribute considerably more than One-Half to the National Income of the United Kingdom, was as follows in the financial year ending March 31, 1884:—

Customs Duties on Articles usually contributing not less than £1,000 Annually.	Gross Receipts. £	s.	d.
Beer, Mum, and Spruce.	2,856	18	0
—— Of other Sorts . .	6,562	14	3
Chicory	68,116	17	7
Cocoa, Cocoa Husks, and Chocolate . .	64,989	10	3
Coffee	109,597	5	0
Currants	330,198	17	7
Figs	33,990	2	6
Plate, Gold and Silver .	5,740	9	2
Plums, Dried or Preserved, French Plums and Prunelloes . .	4,732	0	10
Prunes	7,448	11	0
Raisins	160,189	12	6
Spirits, Colonial and Foreign:—			
Rum	2,127,836	17	6
Brandy	1,480,957	18	5
Geneva	120,872	5	7
Of other sorts . . .	484,775	19	2
Tea	4,268,733	19	1
Tobacco and Snuff . .	9,088,436	6	5
Wine	1,268,841	13	11
All other Articles . . .	2,108	3	11
Charges on deliveries from the Bonded Warehouses . . .	33,874	11	6
Moneys deposited and not appropriated to goods	2,348	13	11
	£19,763,209	8	1
Duties collected at the Isle of Man . . .	51,348	18	9
Total Customs .	£19,814,558	6	10
Drawbacks, Repayments, &c. . . .	167,981	9	1
Net Produce . .	£19,646,576	16	0

Excise Duties.	Gross Receipts. £	s.	d.
Beer	8,657,140	13	11¾
Railways	747,699	14	11¼
Spirits	14,888,419	4	0
Chicory	1,735	4	1
Coffee Mixture Labels .	5,673	0	10½
Licences, viz.:			
Auctioneers, Appraisers, &c.	81,076	0	0
Beer and Cider, and Beer and Wine . .	189,504	13	2¾
Brewers	42,974	13	0
Dog	336,665	5	0
Establishment, viz.:			
Armorial Bearings .	78,765	15	0

Excise Duties, contd.	Gross Receipts. £	s.	d.
Carriages	564,588	18	6
Male Servants . .	139,630	10	0
Game	177,834	0	0
Gold and Silver Plate .	47,837	14	0
Gun	80,771	10	0
Hawkers and Pedlars .	26,407	15	0
Medicine Vendors . .	4,980	5	0
Pawnbrokers . . .	35,107	10	0
Refreshment Houses .	6,444	2	3
Spirits:			
Distillers and Rectifiers	4,159	10	0
Dealers	120,565	18	6
Publicans, including Grocers in Scotland and Ireland . . .	1,494,282	19	6
Tobacco	85,712	16	4
Wine and Sweets . .	70,702	16	10¾
Other than the foregoing	9,069	0	2½
Total Excise . . .	£27,897,749	10	3¾
Deductions on account of Drawbacks, Discounts, Parliamentary Allowances, Repayments, &c. .	£849,698	19	0¾
Net Produce . .	£27,048,050	11	3

Stamps.—The following table gives the gross receipts from Stamps in the United Kingdom during the year ended the 31st of March, 1884:—

Heads of Duty.	Gross Receipts. £	s.	d.
Probate and Account Duty.	4,178,502	17	7
Legacy Duty	2,506,010	11	9
Succession Duty . . .	845,966	1	3
Total Probate and Legacy, &c., Duties	7,530,479	10	7
Deeds and other Instruments, not included under the following heads . .	1,890,180	1	3
Bills of Exchange . .	751,302	8	9
Receipts, Drafts, and other 1*d.* Stamps .	942,727	17	1
Bankers' Notes. . . .	384	7	6
Composition for the Duties on the Bills and Notes of the Banks of England and Ireland, and of Country Bankers .	130,093	8	8
Cards	15,056	15	6
Gold and Silver Plate, viz.:			
Gold	23,326	1	5¾
Silver	55,528	7	8½
Licences and Certificates	152,189	10	0
Life Insurances . . .	30,964	6	4

Heads of Duty.	Gross Receipts. £	s.	d.
Marine Insurances . .	159,116	16	1
Medicine	159,237	12	3
Total Stamps . .	£11,846,587	3	2½
Drawbacks, Discounts, and Allowances .	165,155	17	7
Net Produce . .	£11,681,431	5	7½
Fee Stamps, viz.:			
Admiralty Court (Ireland) . . .	555	10	0
Bankruptcy Court (England) . . .	52,959	4	2
Bankruptcy Court (Ireland) . . .	3,625	18	6
Chancery Fund (Ireland) . . .	740	6	4
Civil Service Commission	11,374	2	0
Colonial Stock Act. .	45	0	0
Companies Registration	32,972	15	8
County Courts (Ireland)	32,125	3	6
Courts of Survey, Merchant Shipping	14	11	0
District Audit . . .	28,365	15	0
Judgments Registry Fund (Ireland) .	3,301	14	4
Judicature (England).	348,469	1	3
" (Ireland) .	36,973	16	10
Land Commission (England). . .	6287,	15	0
Land Court (Ireland) .	2,636	5	7
Land Registry (England).	848	9	10
Law Courts (Scotland)	5,188	0	0
London Gazette . .	25,144	10	0
Newspaper Registration	393	19	0
Patent Hearings and Disclaimers . .	137	15	0
Police Courts (Metropolis) . . .	8,897	10	0
Public Record . . .	778	16	6
Railway Commission .	341	7	6
RegisterHouse (Scotland)	38,579	8	11
Registration of Deeds (Ireland) .	13,469	15	5
Warrants for Letters Patent under the Great Seal . . .	929	0	0
Total Fee Stamps . .	£655,155	11	4
Patents for Inventions	192,497	11	6
Total Fee and Patent Stamps	847,653	2	10
Discounts, Repayments .	2,570	3	5
Net Receipt . .	£845,082	19	3

NATIONAL REVENUE FROM 1875 TO 1884.—The following table shows the total gross Revenue in each of the financial years ended March 31, from 1875 to 1884, inclusive, and the proportion of receipts per head of population of the United Kingdom:—

Year ended March 31.	Revenue. £	Proportion per head of Population. £	s.	d.
1875	74,921,873	2	6	3
1876	77,131,693	2	7	1
1877	78,565,036	2	7	6
1878	79,763,298	2	7	8
1879	83,115,972	2	9	2
1880	81,265,055	2	7	7
1881	84,041,288	2	8	7
1882	85,822,282	2	9	0
1883	89,004,456	2	10	4
1884	87,205,184	2	8	10

NATIONAL EXPENDITURE FROM 1875 to 1884.—The following table shows the total amount of National Expenditure for each of the financial years ended March 31, from 1875 to 1884, inclusive, and the proportion of receipts per head of population of the United Kingdom:—

Year ended March 31.	Expenditure. £	Proportion per Head of Population. £	s.	d.
1875	74,328,040	2	5	10
1876	76,621,773	2	6	10
1877	78,125,227	2	7	2
1878	82,403,495	2	9	3
1879	85,407,789	2	10	6
1880	84,105,754	2	9	3
1881	83,107,924	2	8	3
1882	85,472,556	2	8	10
1883	88,906,278	2	10	3
1884	86,999,564	2	8	9

NATIONAL DEBT.—The following table shows the total amount of the Funded Debt of the United Kingdom on the 31st of March, 1883, the Debt created and reduced in the year ended 31st March, 1884, and the balance at the latter date:—

	£	s.	d.
Total Funded Debt on 31st March, 1883 .	712,698,994	4	1
Debt reduced in the year ended 31st March, 1884 . . .	72,067,899	2	10
Balance, being total Funded Debt on 31st March, 1884 . . .	640,631,095	1	3

STATE OF THE NATIONAL DEBT.—The following table shows the state of the Public Funded Debt of the United Kingdom on 31st March, 1884 :—

Capital Funded Debt:—	Capitals. £	s.	d.
Great Britain.			
New Annuities, at 2½ per cent.	13,147,716	18	3
Exchequer Bonds, created per 16 Vict., c. 23, at 2½ per cent.	418,300	0	0
Total, at 2½ per cent.	£13,566,016	18	3
Debt due to the Bank of England, at 3 per cent.	11,015,100	0	0
Consolidated Annuities, at 3 per cent.	340,836,619	11	11
Reduced Annuities, at 3 per cent.	83,370,810	7	6
New Annuities, at 3 per cent.	160,336,592	8	1
Total, at 3 per cent.	£595,559,122	7	6
New Annuities, at 3½ per cent.	225,746	6	4
Total, Great Britain	£609,350,885	12	1
Ireland.	£	s.	d.
New Annuities, at 2½ per cent.	432,402	3	3
Debt due to the Bank of Ireland, at 3 per cent.	2,630,769	4	8
Consolidated Annuities, at 3 per cent.	4,464,971	9	3
Reduced Annuities, at 3 per cent.	120,411	8	2
New Annuities, at 3 per cent.	23,631,655	3	10
Total, at 3 per cent.	£30,847,807	5	11
Total, Ireland	£31,280,209	9	2
Total Capital of the Funded Debt of the United Kingdom, on 31st March, 1884	640,631,095	1	3

EXCHEQUER BALANCES.—The following table shows the balances at the end of each financial year from 1881 to 1884 :—

Financial years ended 31st March.	Amount.
1881	5,923,662
1882	5,976,585
1883	6,972,730
1884	5,632,569

CHARGES ON NATIONAL DEBT.—The following table shows the annual charges on the Funded Debt of the United Kingdom, in the year ended the 31st of March, 1884 :—

	Annual Charge. £	s.	d.
Great Britain :			
At 2½ per cent.	339,150	8	5
At 3 ,,	17,866,773	13	5
New Annuities	7,901	2	5
Total	£18,213,825	4	3
Ireland :			
At 2½ per cent.	10,810	1	0
At 3 ,,	925,434	4	4
Total	£936,244	5	4
Total charge on Funded Debt	19,150,069	9	7
Charge on Terminable Annuities, &c.	9,073,304	17	7
Charge on Sinking Fund Annuities, &c.	92,936	15	11
	28,316,311	3	1
Management	218,201	14	1
Total Charge	£28,534,512	17	2

COINAGE OF THE ROYAL MINT.—The amount of gold, silver, and copper (bronze) moneys coined at the Royal Mint in each year from 1865 to 1883 was as follows:—

Years.	Gold. £	Silver. £	Copper. £
1865	2,367,614	501,732	57,493
1866	5,076,676	493,416	50,624
1867	496,397	193,842	33,301
1868	1,653,384	301,356	16,328
1869	7,372,204	76,428	20,832
1870	2,313,384	336,798	32,704
1871	9,919,656	701,514	7,616
1872	15,261,442	1,243,836	47,413
1873	3,384,568	1,081,674	46,218
1874	1,461,565	890,604	65,632
1875	243,264	594,000	69,813
1876	4,696,648	222,354	61,450
1877	981,468	420,948	51,145
1878	2,265,069	613,998	17,024
1879	35,050	549,054	44,651
1880	4,150,052	761,508	19,264
1881	—	997,128	39,349
1882	—	209,880	42,560
1883	1,403,713	1,274,328	33,450

IMPORTS OF BULLION AND SPECIE.—The value of the registered imports of gold and silver bullion and specie into the United Kingdom from various countries in 1883 was 17,223,802*l.*, as compared with 23,619,484 in 1882.

LOCAL TAXATION.—The following table shows the amount of direct and indirect taxation, and of other sources of receipts, for the purposes of local expenditure, in England and Wales, in the years 1880–81 and 1881–82:—

	1880–81.	1881–82.
	£	£
Local taxes:		
Direct, levied by rates	26,818,914	27,905,608
Indirect, levied by tolls, dues, &c.	5,018,227	5,026,846
Total ..	31,837,141	32,932,454
Other receipts:		
Rents, interest, &c. ..	804,709	814,697
Sales of property ..	212,835	330,620
Government contributions ..	2,708,328	2,865,584
Loans	12,937,528	15,006,238
Miscellaneous ..	5,366,502	5,526,086
Total ..	22,029,902	24,543,225
Total receipts	53,867,043	57,475,679

In Scotland the receipts in 1880–81 were 6,058,600*l.*, and in 1881–82 6,314,172*l.*; in Ireland in 1880–81 the total receipts were 3,872,249*l.*, and in 1881–82 3,915,228*l.* The totals for the United Kingdom were in 1880–81 63,797,892*l.*, and in 1881–82 67,705,079*l.*

POOR RATES.—The following table shows the gross estimated and rateable value of rental assessed to the poor rates for England and Wales, and amount received and expended for relief of the poor from 1873 to 1883:—

Years ended Lady day.	Rateable Rental Assessed to the Poor Rate.	Total Receipts from Poor Rates and Receipts in aid of Poor Rates.	Expended.
	£	£	£
1873	112,317,603	12,657,943	12,426,566
1874	115,646,631	12,803,762	12,851,007
1875	119,079,589	13,194,446	12,694,208
1876	—	12,905,395	12,636,942
1877	124,587,474	12,948,174	12,998,237
1878	127,548,380	13,489,712	13,615,297
1879	131,021,019	13,871,118	13,693,184
1880	133,769,875	14,001,512	14,092,102
1881	135,645,473	14,340,592	14,390,262
1882	139,656,307	14,918,273	14,864,739
1883	141,407,686	15,238,111	15,057,179

LAND-TAX AND INHABITED HOUSE DUTY.—The following table shows the net receipt in the years ended 31st March, 1883, and 1884:—

	March 31, 1883.	March 31, 1884.	Increase.
	£	£	£
Land-tax ..	1,055,188	1,061,913	6,725
Inhabited house duty	1,787,966	1,837,310	49,344
	2,843,154	2,899,223	56,069

DIRECT LOCAL TAXATION.—The following table shows the amount of the rates levied for the purposes of local expenditure in England and Wales in the year 1881–2:—

	£
Poor Rates, exclusive of Precept Rates	8,335,918
School Board Rates . . .	1,772,263
Metropolitan Board of Works .	639,582
Vestries or District Boards, exclusive of Precept Rates .	1,607,391
Corporation and Commissioners of Sewers of the City of London, exclusive of Precept Rates	218,446
Metropolitan Police . . .	583,967
Municipal Borough, exclusive of Precept Rates . . .	1,407,363
Urban Sanitary Authorities .	9,101,778
Rural Sanitary	332,336
Lighting and Watching under 3 and 4 Will. 4, c. 90 . .	36,266
County Treasurers . . .	1,578,633
Burial Boards	148,953
Highway Boards . . .	1,846,228
Commissioners of Sewers and Drainage and Embankment Commissioners . . .	278,369
Church Rates	11,865
Baths	6,250
Total	27,905,608

COST OF THE ARMY IN 1883–4.—The following was the expenditure from the Exchequer of the United Kingdom for the Military Forces (exclusive of Fortifications):—

	£
Army, including Ordnance and Army Purchase Commission	15,910,326
Army, Indian Home Charges	1,230,000
Navy, including Transport Service	10,728,781
Afghan War, Grant to India	1,000,000
Localisation of Forces ..	40,000
Total for the Forces ..	28,909,107

BANK RATE.—The following Table shows the Average Minimum Rate per cent. of Discount charged by the Bank of England in each Month, in each Year from 1870 to 1883:—

Months.	1870.	1871.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.
January	3	2½	3	4½	3¾	4½	4⅝	2	3½	4½	3	3 5/16	5 3/16	4½
February	3	2½	3	3½	3½	3⅝	4	2	2	3	3	3½	5 1/16	3¾
March	3	3	3	3½	3½	3½	3 7/8	2	2	2¾	3	3	4	3
April	3	2¾	3¾	4	3½	3½	2 7/8	2	3	2⅞	3	3	3	3
May	3	2½	4⅝	5½	4	3½	2	2⅞	3	2	3	2½	3	3 1/16
June	3	2⅞	3½	6½	2¾	3½	2	3	2½	2	2¾	2½	3	4
July	3½	2⅛	3¼	4⅜	3	3	2	2½	3½	2	2½	2½	3	4
August	5	2	3½	3¼	3⅝	2¼	2	2⅛	4⅝	2	2½	2 5/16	3 1/16	4
September	3¼	2⅛	3¾	3¼	3	2	2	3	5	2	2½	4	4 7/16	3 1/16
October	2½	2⅞	5⅝	6	3½	3½	2	4½	5½	2	2½	3 9/16	5	3
November	2½	4½	6½	8⅛	4½	3½	2	4¼	5⅝	2¼	2½	5	5	3
December	2½	3¼	5⅝	5¼	6	3	2	4	5	3	2⅝	5	5	3
Average for Year	3 1/16	2 7/8	4 1/16	4 3/4	3¾	3¼	2 1/16	2 7/8	3¾	2⅜	2¾	3½	4¼	3 9/16

PRICE OF STOCK.—The following Table shows the average price per 100*l.* of the Three per Cent. Consolidated Stock of the Public Funds of the United Kingdom in each Month, in each Year from 1870 to 1883:—

Months.	1870.	1871.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.
January	92⅜	92⅜	92 5/8	92 1/8	92¼	92⅜	93⅜	95¼	95 3/16	95¾	97¾	98⅝	99 5/16	100½
February	92½	91⅛	92¼	92¼	92¼	92 3/8	94 5/16	95 1/8	95 9/16	96¼	98 1/16	98 1/16	99⅝	102¼
March	92⅞	92	92¼	92⅛	92	93	94 3/16	96 7/16	95¼	96¾	97¼	99¼	100⅞	102 1/16
April	93⅛	93	92½	93½	92⅛	93½	94 15/16	95⅝	94 13/16	98¼	98¼	100 1/16	101⅛	102⅛
May	94⅛	93⅛	93⅛	93½	93¼	94	96	94¼	96 3/16	98⅜	99¼	102 5/16	102	101 7/8
June	92⅜	92	92⅜	92¼	92⅜	93	94¼	94⅜	95⅛	97¼	98⅜	100⅜	100½	100⅝
July	91⅛	93¼	92¼	92½	92⅝	94⅛	95¾	94⅜	95 1/16	97⅛	98⅜	101⅛	99 3/16	99 3/16
August	90¾	93⅛	92	92¼	92⅛	94⅜	96 7/16	95⅛	94 7/16	97⅜	97½	100¼	99¼	99⅛
September	92	93⅛	92⅜	92½	92⅛	94⅜	95⅜	95½	94 3/16	97¼	97¼	99⅜	99⅛	100⅛
October	92⅛	92¼	92¼	92½	92⅜	94 1/16	95 7/16	95¼	94½	98	98 9/16	98 1/16	101 3/16	101⅛
November	92⅜	93¼	92⅜	92⅜	93⅛	94⅜	95¼	96 1/16	95 1/16	98¼	99 1/16	100¼	102 1/16	101 1/16
December	91⅞	92¼	91⅝	92	91⅝	93⅜	94	95 5/16	94⅝	97⅜	98¼	99 5/16	100 3/16	100½
Average for Year	92¼	92¾	92⅓	92⅓	92⅓	93¾	95	95⅜	95 3/16	97½	98¾	100	100½	101 3/16

The following is a Return of the Quarterly Averages of the Weekly Liabilities and Assets of the Bank of England for 1866, 1871, 1876, 1881, 1882, and 1883:—

Years.	Quarter ended	Liabilities.			Assets.		
		Notes in Circulation.	Deposits.	Total.	Securities.	Bullion.	Total.
		£	£	£	£	£	£
1866	March 28	21,436 000	17,783,000	39,219,000	30,058,000	13,570,000	43,628,000
	June 27	24,588,000	22,198,000	46,786,000	37,384,000	13,571,000	50,955,000
	September 26	25,193,000	21,566,000	46,749,000	36,536,000	14,872,000	51,408,000
	December 26	23,728,000	22,740,000	46,468,000	33,110,000	17,478,000	50,588,000
1871	March	24,158,000	27,902,000	52,060.000	33,578,000	21,945,000	55,523,000
	June	24,705,000	28,762,000	53,467,000	32,391,000	24,192,000	56,583,000
	September	25,668,000	29,061,000	54,729,000	32,909,000	25,264,000	58,173,000
	December	25,625,000	28,010,000	53,635,000	33,827,000	22,952,000	56,779,000
1876	March	27,118,000	26,662,000	53,780,000	34,336,000	22,932,000	57,268,000
	June	27,917,000	28,610,000	56,527,000	32,513,000	27,120.000	59,633,000
	September	28,653,000	33,669,000	62,322.000	32,314,000	33,456,000	65,770,000
	December	28,565,000	33,043,000	61,608,000	33,440,000	31,272,000	64,712,000
1881	March	26,100,000	34,017,000	60,117,000	37,204,000	26,400,000	63,604,000
	June	26,859,000	32,757,000	59,616,000	36,343,000	26,366,000	62,709,000
	September	27,135,000	31,514,000	58,649,000	37,478,000	24,676,000	62,154,000
	December	26,237,000	28,633,000	54,870,000	37,096,000	20,876,000	57,972,000
1882	March	25,349,000	31,142,000	56,491,000	38,749,000	21,290,000	60,039,000
	June	26,290,000	30,527,000	56,817,000	36,452,000	23.466,000	59,918,000
	September	26,872,000	29,882,000	56,754,000	37,811,000	22,459,000	60,270,000
	December	26,351,000	27,410,000	53,761,000	36,147,000	20,751,000	56,898,000
1883	March	25,385,000	30,362,000	55,747,000	37,141,000	22,142,000	59,283,000
	June	25,847,000	30,547,000	56,394,000	38,418,000	21,130,000	59,548,000
	September	26,142,000	29,016,000	55,158,000	35,381,000	23,253,000	58,634,000
	December	25,683,000	29,205,000	54,888,000	35,669,000	22,355,000	58,024,000

NATIONAL DEBT FROM 1870 TO 1884.—The following table shows the total amount of the National Debt at the end of each financial year, 1870 to 1884:—

Financial Years ended 31st March	Funded Debt. Capital of Unredeemed Funded Debt, inclusive of Unclaimed Stock and Dividends.	Funded Debt. Estimated Capital of Terminable Annuities (Computed in 3 per Cent. Stock), at Par.	Amount of Unfunded Debt.	Total Amount of National Debt, inclusive of Unclaimed Stock and Dividends.
	£	£	£	£
1870	741,514,681	46,633,630	6,761,500	794,909,811
1871	732,043,270	51,050,196	6,091,000	789,184,466
1872	731,756,962	49,013,769	5,155,100	785,925,831
1873	727,374,082	47,018,928	4,829,100	779,222,110
1874	723,514,005	44,941,333	4,479,600	772,934,938
1875	714,797,715	48,908,742	5,239,300	768,945,757
1876	713,657,517	45,847,366	11,401,800†	770,906,683
1877	712,621,355	43,449,568	13,943,800†	770,014,723
1878	710,843,007	40,705,718	20,603,000†	772,151,725
1879	709,430,593	37,664,369	25,870,100†	772,965,062
1880	710,476,359	33,784,649	‡27,344,900†	771,605,908
1881	709,078,526	34,988,435	22,077,500†	766,144,461
1882	*709,498,547	33,181,875	*18,007,700†	760,688,122
1883	*712,698,994	27,570,876	*14,185,400†	754,455,270
1884	‖640,631,095	‖91,682,269	14,110,600†	746,423,964

* Under the National Debt Act, 1881, Bonds amounting to 7,750,000*l.* were converted into 8,603,006*l.* Stock.

† Including outstanding Exchequer Bonds issued for raising money for the purchase of Suez Canal shares. In 1884 these amounted to 3,516,800*l.*

‡ Including 1,000,000*l.* borrowed in aid of Ways and Means.

‖ In the course of the financial year 1883–4, 70,241,908*l.*, three per cent. Stock was converted into Terminable Annuities under the provisions of the National Debt Act, 1883.

RATES OF INCOME TAX 1843–1884.

Year.	Rate.	Year.	Rate.	Year.	Rate.
	s. *d.*		*s.* *d.*		*s.* *d.*
1843–4.. ..	0 7	1857–8.. ..	0 7	1871–2.. ..	0 6
1844–5.. ..	0 7	1858–9.. ..	0 5	1872–3.. ..	0 4
1845–6.. ..	0 7	1859–60 ..	0 9	1873–4.. ..	0 3
1846–7.. ..	0 7	1860–1.. ..	0 10	1874–5.. ..	0 2
1847–8.. ..	0 7	1861–2.. ..	0 9	1875–6.. ..	0 2
1848–9.. ..	0 7	1862–3.. ..	0 9	1876–7.. ..	0 3
1849–50 ..	0 7	1863–4.. ..	0 7	1877–8.. ..	0 3
1850–1.. ..	0 7	1864–5.. ..	0 6	1878–9.. ..	0 5
1851–2.. ..	0 7	1865–6.. ..	0 4	1879–80 ..	0 5
1852–3.. ..	0 7	1866–7.. ..	0 4	1880–1.. ..	0 6
1853–4.. ..	0 7	1867–8.. ..	0 5	1881–2.. ..	0 5
1854–5.. ..	1 2	1868–9.. ..	0 6	1882–3.. ..	0 6½
1855–6.. ..	1 4	1869–70 ..	0 5	1883–4.. ..	0 5
1856–7.. ..	1 4	1870–1.. ..	0 4	1884–5.. ..	0 5

Notes.—(*a*). From 1853–4 to 1862–3 a lower rate was charged on incomes from 100*l.* to 150*l.* as follows:—1853–4 at 5*d.*; 1854–5 at 10*d.*; 1855–6 at 11½*d.*; 1856–7 at 11½*d.*; 1857–8 at 5*d.*; 1858–9 at 5*d.*; 1859–60 at 6½*d.*; 1860–61 at 7*d.*; 1861–2 at 6*d.*; and 1862–3 at 6*d.* From 1863 to 1876 incomes under 100*l.* were free of taxation, and there was only one rate for all incomes above that sum, with abatement of 60*l.* on incomes under 200*l.* from 1863 to 1871, and of 80*l.* on incomes under 300*l.* from 1872 to 1875. In 1876 the point of exemption was raised to 150*l.*, and incomes below that amount have since been free of income tax, while for all incomes under 400*l.* no tax is paid upon the first 120*l.*

2. GENERAL COMMERCE AND NAVIGATION.

NAVIGATION RETURNS.—The subjoined table shows the tonnage of British and Foreign vessels (sailing and steam) entered and cleared, *with cargoes*, at ports in the United Kingdom, from and to foreign countries and British Possessions, from 1865 to 1883:—

Years.	Entered.			Cleared.		
	British.	Foreign.	Total.	British.	Foreign.	Total.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1865 ..	8,356,914	3,801,780	12,158,694	9,056.729	3,770.422	12,827,151
1866 ..	9,215,820	4,061,370	13,277,190	9,954,147	4,055,947	14,010,094
1867 ..	9,356,814	3,984,634	13,341,448	10,586,058	4,261,523	14,847,581
1868 ..	9,572,450	4,279,207	13.851,657	10,902,171	4,570,848	15,473,019
1869 ..	10,042,182	4,444,518	14,486,700	11,313,757	4,603,227	15,916,984
1870 ..	10,308,952	4,601,790	14,910,742	11.934,087	4,779.851	16,713.938
1871 ..	11,250,120	5,205,222	16,455,342	13,396,583	5 650,872	19,047.455
1872 ..	12,139,805	5,766,135	17.905,940	13,574,471	5,673.881	19,248,352
1873 ..	12,474,912	6,320,145	18,795,057	13,653,030	5.486,335	19,139,365
1874 ..	12.751,128	6,330,278	19,081,406	14,010,786	5.742,701	19,753,487
1875 ..	12,852,351	6,187,577	19,039.928	14.454 989	5,958,750	20,413,739
1876 ..	13,672,122	7,354,549	21,026,671	15,201,602	6,309,111	21,510,713
1877 ..	14,894,448	7,237,176	22,131,624	15,358,033	5.837,323	21,195,356
1878 ..	14,513,688	6.804.558	21,318,246	15,783,488	5,798 200	21,581,688
1879 ..	15,039,579	6,059,765	21,099.344	17,095,146	5,754.211	22.849.357
1880 ..	17,018,011	6,975,269	23,993,280	18,867,857	6,817,813	25,685,670
1881 ..	16,864,668	6 360,040	23,224,708	19,605,532	6,731.161	26,336,693
1882 ..	17.810,380	7,004,669	24,815,049	20.392,626	7,306,237	27,698,863
1883 ..	19,186,054	7,124,264	26,310,318	22,135,662	7,237,498	29,373,160

IMPORTS INTO THE UNITED KINGDOM.—The following table gives the quantities of the chief articles imported into the United Kingdom in the year ended the 31st of December, 1883:—

Articles.		Quantity.
Animals:—		
Oxen, Bulls, Cows, and Calves	No.	474,750
Sheep and Lambs	,,	1,116,115
Bacon and Hams	Cwts.	3,695,992
Beef	,,	1,094,028
Bones, except Whalebone	Tons	86,346
Brimstone	Cwts.	877,646
Bristles	Lbs.	2,748,108
Butter and Butterine	Cwts.	2,334.473
Candles of all sorts	,,	70,921
Caoutchouc	,,	229,101
Cheese	,,	1,799.704
Clocks	No.	720,321
Cocoa	Lbs.	22,698,161
Coffee	Cwts.	1,407,134
Corn, Wheat	,,	64,138,631
—— Barley	,,	16,461,328
—— Oats	,,	15,137,540
—— Maize	,,	31,739,106
—— Other kinds	,,	5,745,807
—— Flour of Wheat	,,	16,329,312
—— —— Of other kinds.	,,	1,211,416
Total of Corn	,,	150,763,140
Cotton, Raw	,,	15,485,121
Dyeing or Tanning Stuffs:—		
Cochineal, Granilla, and Dust	Cwts.	21,440
Cutch and Gambier	Tons	26.837
Indigo	Cwts.	100,243
Garancine, Madder, Madder Root and Munjeet	,,	21,709
Shumach	Tons	14,876
Valonia	,,	30,468
Eggs	No.	940,436,160
Fish	Cwts.	1,295,754
Flax and Hemp:—		
Flax, Dressed and Undressed	,,	1,263,822
Tow or Codilla of Flax and Hemp	,,	393,594
Hemp and other like Substances (except Jute), Dressed and Undressed	,,	1,424,693
Jute	,,	7,385,028
Fruits:—		
Currants	,,	1,026,584
Raisins	,,	588,309
Oranges and Lemons	Bush.	4,477,043
Glass of all Kinds	Cwts.	1,377.932
Guano	Tons	74,221
Gutta-percha	Cwts.	63,800
Hair:—		
Goats' Hair or Wool	Lbs.	13,364,822
Hides, Raw, Dry, and Wet	Cwts.	1,196,849

Articles.		Quantity.
Hops	Cwts.	129,900
Lard	,,	853,541
Leather	Lbs.	74,718,266
Leather Gloves	Pairs	20,019,576
Meat, Salted or Fresh	Cwts.	272,849
—— Preserved, other than Salted	,,	610,400
Metals:—		
Copper Ore and Regulus	Tons	163,781
Copper, Unwrought and part Wrought, and old Copper	Cwts.	761,940
Iron, in Bars	Tons	122,895
Iron and Steel, Wrought or Manufactured	Cwts.	3,880,076
Lead, Pig and Sheet	Tons	101,715
Tin, in Blocks, Ingots, Bars, or Slabs	Cwts.	521,048
Zinc, Crude, in Cakes	Tons	40,792
—— Manufactures	Cwts.	407,391
Oil, Fish	Tuns	17,156
— Palm	Cwts.	749,422
— Cocoa Nut	,,	210,874
— Olive	Tuns	31,053
— Seed	,,	10,524
— Turpentine	Cwts.	350,138
Oil Seed Cake	Tons	256,682
Paper, for Printing or Writing	Cwts.	207,645
Petroleum, Unrefined	Galls.	70,526,996
—— Refined		
Pork	Cwts.	376,899
Potatoes	,,	5,149,509
Pyrites of Iron or Copper	Tons	601,288
Rags and Paper-making Materials:—		
Rags	,,	28,543
Esparto and other Materials	,,	288,549
Rice, not in the Husk	Cwts.	7,747,725
—— in the Husk	Qrs.	—
Rosin	Cwts.	1,377,368
Saltpetre	,,	285,647
—— Cubic Nitre	,,	2,051,825
Seeds:—		
Clover and Grass	,,	316,375
Cotton	Tons	248,531
Flax or Linseed	Qrs.	2,323,397
Rape	,,	767,127
Silk Knubs or Husks and Waste	Cwts.	62,064
Silk, Raw	Lbs.	3,178,593
—— Thrown	,,	292,433
Skins:—		
Sheep and Lamb, Undressed	No.	8,145,431
Seal	,,	671,284
Goat, Undressed	,,	4,749,795
Spices:—		
Cinnamon	Lbs.	1,697,770
Pepper	,,	31,375,589
Of all other sorts	,,	22,647,125
Spirits:—		
Rum	Pf. Gals.	5,979,498
Brandy	Pf. Gals.	2,202,344
Other Foreign and Colonial Spirits	,,	1,655,095
Total of Spirits	,,	9,836,937
Sugar, Refined and Sugar Candy	Cwts.	3,283,920
—— Raw	,,	20,366,627
—— Molasses	,,	372,683
Tallow and Stearine	,,	1,038,277
Tea	Lbs.	222,262,431
Teeth, Elephants', Sea-Cow, and Sea Horse	Cwts.	13,597
Tobacco, Manufactured, Cigars, and Snuff	Lbs.	3,121,174
—— Unmanufactured	,,	56,475,199
Wine	Gals.	15,559,795
Wood and Timber:—		
Hewn	Loads	2,152,868
Sawn or Split	,,	4,315,622
Staves	,,	141,452
Mahogany	Tons	50,158
Wool,—Sheep, Lamb, Alpaca, and the Llama Tribe	Lbs.	495,946,779
Woollen Rags	Tons	35,767
Woollen and Worsted Yarn:—		
Berlin Wool and Yarn used for Fancy Purposes	Lbs.	951,221
Yarn for Weaving	,,	14,558,567
Yeast, Dried	Cwts.	260,904

EXPORTS OF HOME PRODUCE FROM THE UNITED KINGDOM.—The following table shows the quantities of the chief articles of British and Irish produce and manufactures exported from the United Kingdom in the year ended the 31st of December, 1883:—

Principal Articles.		Quantity.
Alkali	Cwts.	6,947,000
Animals: Horses	No.	7,376
Arms and Ammunition:—		
Firearms (Small)	No.	263,731
Gunpowder	Lbs.	15,832,400
Bags, Empty	Dozs.	4,408 287
Beer and Ale	Brls.	456,109
Books, Printed	Cwts.	123,025
Butter	,,	30,408
Candles, of all sorts	Lbs.	5,285,600
Carriages, Railway	No.	—
Cement	Cwts.	8,015,200
Cheese	,,	13,984
Coals, Cinders, and Fuel	Tons	22,775,634
Cordage and Twine	Cwts.	170,667
Corn: Wheat	,,	42,425
—— Wheat Flour	,,	89,370
Cotton Yarn	Lbs.	264,772,000

Principal Articles.		Quantity.
Cotton Manufactures:—		
Piece Goods. White or Plain	Yds.	3,136,180,200
——— Printed, Checked, or Dyed	,,	1,379,932,200
——— of Mixed Materials	,,	22,776,100
Total of Piece Goods	,,	4,538,888,500
Stockings	Doz. Prs.	1,706,675
Thread for Sewing	Lbs.	14,443,400
Fish: Herrings	Brls.	959,838
Glass: Plate	Sq. Ft.	3,677,314
——— Flint	Cwts.	150,900
——— Common Bottles	,,	769.137
——— Of other Sorts	,,	144,818
Hats of all Sorts	Dozs.	1,057,826
Leather, Tanned, Unwrought	Cwts.	175,328
—— Wrought, Boots and Shoes	Doz. Prs.	513,134
—— of other Sorts	Lbs.	—
Linen and Jute Yarn:		
Linen Yarn	,,	17,678,300
Jute Yarn	,,	21,176,700
Linen and Jute Manufactures:—		
Linen Manufactures:		
White or Plain	Yds.	152,163,000
Printed, Checked, or Dyed	,,	6,576,600
Sailcloth and Sails	,,	3.516,500
Total of Piece Goods	,,	162,256,100
Thread for Sewing	Lbs.	2,253,100
Jute Manufactures	Yds.	227,256,000
Metals:—		
Iron, Old, for remanufacture	Tons	97,475
—— Pig, and Puddled	,,	1,564,048
—— Bar, Angle, Bolt, and Rod	,,	288,271
—— Railroad, of all Sorts	,,	971,165
—— Wire	,,	62,620
—— Hoops, Sheets, and Boiler Plates	,,	347,782
—— Tinned Plates	,,	269,375
—— Cast, wrought, and all other manufactures	,,	355,842
—— Steel, unwrought	,,	73,131
—— Manufactures of Steel, or of Steel and Iron combined	,,	13,599
Total of Iron and Steel	,,	4,043,308
Copper, Unwrought:—		
Ingots, Cakes or Slabs	Cwts.	338,601

Principal Articles.		Quantity.
Copper, Wrought or partly Wrought:—		
Mixed or Yellow Metal	Cwts.	395,077
Of other Sorts	,,	321,340
Brass of all Sorts	,,	96,590
Lead, Pig, Sheet, and Pipe	Tons	39,315
Tin, Unwrought	Cwts.	107,437
Zinc, Wrought and Unwrought	,,	142,132
Oil, Seed	Gals.	20,154,700
Paper (other than Hangings)	Cwts.	597,923
Salt	Tons	1,004,313
Silk Manufactures:—		
Broad Piece Goods	Yds.	7,687,992
Soap	Cwts.	391,788
Spirits, British	Gals.	2,732,856
Sugar, Refined	Cwts.	1,155,787
Wool, Sheep and Lambs'	Lbs.	19,443,100
Woollen and Worsted Yarn	,,	33,488,500
Woollen and Worsted Manufactures:—		
Cloths, Coatings, &c., Unmixed and Mixed	Yds.	46,068,500
Flannels, Blankets, Blanketing, and Baizes	,,	13,572,000
Worsted Stuffs, Unmixed and Mixed	,,	185,565,400
Carpets and Druggets	,,	10,699,300

EXPORTS MARKETS OF THE UNITED KINGDOM.—The following table shows the declared value of the British and Irish produce exported from the United Kingdom in the year 1883, first taking the exports to foreign countries, and second the exports to British possessions:—

I. FOREIGN COUNTRIES.

Countries.	Value. £
Russia, Northern Ports	4,161,718
——— Southern Ports	874,896
Sweden and Norway	3.868,822
Denmark proper and Iceland	2,265,959
——— Danish West Indies	185 692
Germany	18,787,635
Holland	9,506,246
——— Java, and other Possessions in the Indian Seas	2,276,088
Belgium	8,327,941
France	17,567,512
——— Algeria	350,839
——— Possessions in Senegambia	84,787
——— Possessions in India	3,597
Portugal	1,962,184
——— Azores and Madeira	134,865
Spain and the Balearic Isles	3,785,034
—— Canary Islands	194,423
—— Fernando Po	7,395

Countries.	Value. £
Spain, West India Islands	2,246,305
—— Philippine Islands	1,216,904
Italy	7,121,948
Austrian Territories	967,529
Greece	1,288,876
Roumania	1,342,619
Turkey	6,689,775
Egypt	3,367,300
Morocco	258,479
United States	27,372,968
Mexico	1,552,321
Central America	839,191
Haiti and San Domingo	301,026
New Granada (United States of Columbia)	1,196,317
Venezuela	639,041
Ecuador	169,937
Brazil	6,648,470
Uruguay	1,286,769
Argentine Confederation	4,904,082
Chili	2,059,889
Peru	734,577
China (exclusive of Hong Kong)	4,224,854
Japan	2,276,573
Western Coast of Africa (exclusive of French and Spanish Possessions separately stated)	1,547,251
Other Countries	1,723,287
Total to Foreign Countries	£156,321,921

II. British Possessions.

Channel Islands	562,868
Gibraltar	724,625
Malta	988,028
North American Colonies:—	
British Columbia, Hudson's Bay Companies Settlement, Canada, New Brunswick, Nova Scotia, Prince Edward Island	8,592,280
Newfoundland	563,647
Total to North America Colonies	£9,155,927
West India Islands and Guiana	3,400,596
British Honduras	119,114
Australia:—	
West Australia	211,171
South Australia	2,559,034
Victoria	6,497,747
New South Wales	8,026,179
Queensland	2,429,203
Tasmania	502,601
New Zealand	3,869,351
Fiji Islands	121,166
Total to Australia	£24,216,452
British India	31,874,084
The Straits Settlements	2,624,001
Ceylon	725,047
Hong Kong	2,891,477
Mauritius	506,423
Cape of Good Hope and Natal	4,556,784
Possessions on the River Gambia	—
Sierra Leone	372,858
Possessions on the Gold Coast	482,628
Other Possessions	276,640
Total to British Possessions	
Total to Foreign Countries and British Possessions	£239,799,473

The following table shows the declared value of the foreign and colonial merchandise exported from the United Kingdom in 1883, taking first the exports to foreign countries, and second the exports to British possessions:—

I. Foreign Countries.

Countries.	Value. £
Russia, Northern Ports	2,298,275
—— Southern Ports	294,994
Sweden and Norway	1,542,150
Denmark Proper, and Iceland	331,848
—— Danish West Indies	5,989
Germany	12,993,735
Holland	6,366,084
—— Java and other Possessions in the Indian Seas	29,082
Belgium	6,427,071
France	11,841,823
—— Algeria	6,177
—— Possessions in Senegambia	8,261
—— Possessions in India	156
Portugal	412,406
—— Azores and Madeira	47,664
Spain and the Balearic Islands	1,091,209
—— Canary Islands	10,293
—— Fernando Po	3,112
—— West India Islands	830,162
—— Philippine Islands	31,709
Italy	1,072,875
Austrian Territories	577,731
Greece	153,578
Roumania	59,822
Turkey	720,230
Egypt	134,192
Morocco	58,330
United States	9,359,538
Mexico	67,931
Central America	21,159
Haiti and St. Domingo	8,409
New Canada (United States of Colombia)	57,030
Venezuela	3,335
Ecuador	11,605
Brazil	366,863
Uruguay	41,302
Argentine Confederation	146,344
Chile	128,989
Peru	152,728

Countries.	Value. £
China (exclusive of Hong Kong)	303,348
Japan	324,699
Western Coast of Africa (exclusive of French and Spanish Possessions separately stated)	250,791
Other Countries	121,199
Total to Foreign Countries	£58,714,228

II. British Possessions.

Channel Islands	201,526
Gibraltar	76,154
Malta	171,236
North American Colonies	953,669
West India Islands and Guiana	351,949
British Honduras	22,722
Australia	2,623,038
British India	1,508,702
The Straits Settlements	169,105
Ceylon	34,032
Hong Kong	155,993
Mauritius	74,135
Cape of Good Hope and Natal	443,467
West African Settlements	42,943
Possessions on the Gold Coast	27,585
Other Possessions	67,113
Total to British Possessions	£6,923,369
Total to Foreign Countries and British Possessions	£65,637,597

Suez Canal.—Return of Shipping and Tonnage that passed through the Suez Canal from the date of its opening in November, 1869, to the 31st December, 1883. The English vessels included in the total being also shown separately :—

Year.	Total vessels.	Gross tonnage.
1869	10	9,436
1870	486	654,915
1871	765	1,142,200
1872	1,082	1,744,481
1873	1,173	2.085,072
1874	1,264	2,423,672
1875	1,494	2,940,708
1876	1,457	3,072,107
1877	1,663	3 418,950
1878	1,593	3,291,536
1879	1,477	3,236,942
1880	2,026	4,344,519
1881	2,727	5,794,401
1882	3,198	7,122,125
1883	3,307	8,051,307

The following table shows the number of vessels and tonnage that passed through the Suez Canal during the year 1882, arranged under their respective flags:—

Flag.	Number of vessels.	Gross tonnage.
Great Britain	2,537	6,136,837·01
France	272	782,133·36
Holland	124	309,583·18
Germany	123	213,666·33
Italy	63	195.101·85
Austria-Hungary	67	136,586·36
Spain	51	148,156·82
Russia	18	44,294·69
Norway	18	32,552·66
Belgium	12	23,450·36
Egypt	3	4·736·33
Turkey	9	9,722·15
China	1	3,097·96
Portugal	1	1,333·00
Denmark	2	2,741·60
Liberia	—	—
Greece	—	—
America	1	1,141·23
Japan	5	6,172·41
Zanzibar	—	—
Brazil	—	—
Sweden	—	—
Siam	—	—
Sarawak	—	—
	3,307	8,051,307·30

Progress of British Merchant Shipping.—A Parliamentary return recently issued shows the progress of British merchant shipping. The first table shows that the tonnage of sailing and steam vessels, with cargoes and in ballast, entered and cleared at ports in the United Kingdom, grew from 9,439,667 tons in 1840, to 64,961,753 tons in 1883, the British tonnage increasing from 6,490,485 to 47,039,079, and the foreign from 2,949,182 to 17,922,674. For both British and foreign tonnage 1883 was the heaviest year recorded; but whereas in that year the foreign tonnage increased only 100,000 tons, the British increased three millions and a quarter tons, and between 1870 and 1883 the British tonnage has nearly doubled. The total tonnage of the merchant navy of the United Kingdom was 6,908,650 tons in 1882, as against 1,292,294 of the United States (registered for oversea), 1,226,650 of the German Empire, 990,004 of Italy, and 983,017 of France. The tonnage of vessels built in the United Kingdom was 472,896 in 1880, 608,878 in 1881, 783.051 in 1882, and 892,216 in 1883, the last year being by far the largest for a quarter of a century. The tonnage built in the United States in 1883 was 265,430, a less total than in either of the two previous years. The total number of seamen employed in vessels belonging to the United Kingdom in 1883 was 200,727, a higher total than for several years previously.

3. TRADE AND AGRICULTURE.

CONSUMPTION OF WINES, SPIRITS, BEER, TEA, COFFEE, AND COCOA.—The following Statement based on the Returns of the Commissioners of Inland Revenue, shows the total quantities of British, Foreign, and Colonial Spirits, Foreign Wines, Beer, Tea, Coffee, and Cocoa, retained for Home Consumption in the years ended 31st December, 1852, 1862, 1872, 1882, and 1883; and the quantity of each consumed per head of population:—

Year ended 31st Dec.	Population.	Consumption of						
		British Spirits.		Foreign and Colonial Spirits.		Gallons per head of spirits of all kinds.	Foreign Wines.	
		Gallons.	Gallons per head.	Gallons.	Gallons per head.		Gallons.	Gallons per head.
1852	27,500,000	25,200,879	·916	4,866,259	·177	1·093	6,346,061	·231
1862	29,255,015	18,836 187	·644	5,193,641	·177	·821	9,764,155	·334
1872	31,835,757	26,872,183	·844	9,068,329	·285	1·129	16,765,444	·527
1882	35,278,999	28,554,264	·809	8,338,578	·236	1·045	14,339,070	·406
1883	35,631,290	28,713,997	·806	8,289,841	·233	1·039	14,287,317	·401

Year ended 31st Dec.	Population.	Consumption of							
		Beer.		Tea.		Coffee.		Cocoa.	
		Barrels.	Barrels per head.	Pounds.	Pounds per head.	Pounds.	Pounds per head.	Pounds.	Pounds per head.
1852	27,500,000	16 732,454	·608	54,713,034	1·909	34,978,432	1·207	3.328,528	·121
1862	29,255,015	19.327,191	·661	78,793,977	2·094	34 4 1,766	1·178	3.622,433	·124
1872	31,835,757	28,171,661	·885	127,661,360	4·010	31,173.555	·976	7,791,703	·245
1882	35 278,999	27,023.616	·766	164,958,230	4·676	31,214 553	·88	11,928 549	·338
1883	35,631,290	26,828,040	·753	170,780,777	4·793	31,562.067	·886	12,888,470	·362

SPIRITS.—The quantity of spirits charged with duty in England and Wales in 1883–4 was 13,589,539 gallons, an increase compared with 1882–3 of 2,150 gallons. In Scotland the quantity was 8,788.884 gallons, an increase of 59,715 gallons. In Ireland the quantity was 7,432,245 gallons, a decrease of 21,918 gallons. The total quantity charged with duty in the United Kingdom was 29,810,668 gallons, an increase on the previous year of 39.947 gallons. From another return showing the quantities of spirits consumed as beverage, we find that in England it was 16.535.748 gallons, a decrease on 1882–3 of 120,060 gallons; in Scotland, 6,708,303, an increase of 212,233 gallons; and in Ireland, 5,304,438 gallons, a decrease of 73,014 gallons. It will be observed that there is an increased consumption of spirits in Scotland, but this is nearly balanced by the decrease in England and Ireland. The consumption per head of the population is still on the decline: the rates in gallons per head for the United Kingdom for the last four years being as follows:—1880, ·835; 1881, ·822; 1882, ·811: 1883, ·801.

BEER.—The Inland Revenue Commissioners report that the number of barrels of beer charged with duty brewed in England and Wales in the year ended March 31st, 1884, was 24,419,284; in Scotland, 1,216,319; in Ireland, 2,114,488; giving a total for the United Kingdom of 27,750,091, as compared with 27,140,891 in the preceding year. The gross receipt from beer duty for the year amounted to 8,657,141*l.*; deducting from this the sum repaid in respect of beer exported, viz., 163,972*l.*, the net receipt amounted to 8,488,169*l.*, an increase on the net receipt for the previous year of 87,801*l.*, but still less than the net receipt for the year 1881 of 42,650*l.* The scarcity and high price of hops which operated so strongly against the brewers in the year 1882 continued during the first half of the year 1883, and brewers could not begin to replenish their stocks of beer until they obtained the fresh crop of hops of the autumn. The Commissioners of Inland Revenue, in reporting on the subject, say, "There can be no doubt, however, that the efforts made in the spread of temperance principles are likely to retard any marked increase in the revenue from this article." The produce of the issue of licenses for brewing for domestic use in the year ended 31st March, 1884, was 28,582*l.*, the number of such licenses issued being 91,769, as against 96,676, a reduction which the Commissioners explain in the following way:—"After the passing of the Beer Duty Act, a great number of persons who did not formerly brew took out licenses for private brewing, under the impression that they could thus obtain beer at a less cost than they could purchase it from brewers. The operation of brewing, however, is troublesome in an ordinary domestic establishment, and cannot be conducted economically on a small scale, and no doubt many of these persons have found it more convenient to revert to their former practice of obtaining beer direct from the brewer."

CONSUMPTION OF COAL.—A Parliamentary paper shows that during 1883 there were exported from the United Kingdom 21,670,926 tons of coal, 488,001 tons of cinders, and 616,707 tons of patent fuel. The heaviest tonnage exported from any single port was 2,934,243 tons of coal from Newcastle, Sunderland closely following with 2,864,448 tons, and Cardiff and Newport next with 1,038.646 and 1,000,033 tons respectively. The amount of coal brought into London during the same year was 11,177,791 tons, of which 4,074,489 were brought coastways, and 7,103,302 by inland navigation and by railway.

REGISTERED NEWSPAPERS.—The fees received from the registration of newspapers for the year ending 31st March, 1884, amounted to 397*l.* 17*s.* 6*d.* As compared with the first year in which the Act came into operation, this shows a considerable falling off, but it is due to the fact that the fee payable on the first return rendered is 10*s.*, and on subsequent returns 5*s.* only. The papers registered now number 1,284 in London, and 114 in Dublin.

THE PATENT MEDICINE TRADE.—In the year 1884 licences were issued to 19,921 persons to sell patent medicines, the amount of duty charged being 4,980*l.* During the same period 19,006,328 patent medicine labels were issued, the amount of duty charged being 159,238*l.* In 1865 the number of licenses issued was 10,922, but at that time the charge was 2*l.* in London and Edinburgh, and 10*s.* in other cities, boroughs, or towns corporate, and 5*s.* elsewhere in Great Britain, whereas now there is a single and uniform charge of 5*s.* The number of patent medicine labels issued in 1865 was 7,074,668.

THE CUSTOMS REVENUE OF 1883–4.—The Commissioners of Customs in their 28th Annual Report, state that the gross receipts of Customs Revenue, inclusive of charges, &c., for the year ended 31st March, 1884, amounted to 19,811,680*l.*, a sum less by 22,631*l.* than the receipts of the previous financial year. Taking into account the usual increase of about 1 per cent. per annum in the population of the United Kingdom, the revenue, which in the preceding year amounted to 19,834.311*l.*, would have reached the sum of 20,032,654*l.*, if the consumption of customable articles had kept pace with the usual growth of the population; the actual yield however, was 220,974*l.* below that sum. In the first quarter of the past year the gross receipts of Customs Revenue, in comparison with those of the corresponding quarter of the previous year, increased by the sum of 58,000*l.* This was succeeded in the following quarter by a decrease of 49,000*l*, thus leaving an increase of 9,000*l.* only on the half-year. In the Christmas quarter, however, the receipts showed an increase of 48,000*l.*, followed in the last quarter by a decrease of nearly 80,000*l.*, the whole financial year thus closing with a decrease of nearly 23,000*l.* There was during the year an increase in the receipts from the duties on cocoa, tea, raisins, figs, plums, prunes, and tobacco, and a decrease on spirits, wine, coffee, and currants. The increase of the revenue from cocoa has been gradual since 1875, when it stood at 39,082*l.* up to 56,425*l.* in the year ending 31st March, 1884. The increase in the receipts from the tobacco duties amounted to 108.000*l.* in the year. The reduction in the receipts from the duties on wine amounted to 26,000*l.* The revenue from this source has uniformly declined during the last eight years, and it amounted to less in the year 1883–4 than it did in 1873–4 by 524,000*l.* The revenue derived

from foreign spirits shows a decrease of 153,000*l.* when compared with that of the previous year, and of 12,000*l.* with that of the year 1881–2.

AVERAGE GAZETTE PRICES OF BRITISH WHEAT, BARLEY, and OATS, per IMPERIAL QUARTER in EACH MONTH IN 1867, 1870, 1873, 1876, 1881, 1882, and 1883.

MONTHS.	1867.	1870.	1873.	1876.	1881.	1882.	1883.
	WHEAT.						
	s. d.	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*
January ..	61 4	43 8	55 9	44 9	42 5	45 7	40 2
February ..	60 10	41 3	56 4	43 1	41 9	46 0	40 11
March ..	59 9	41 5	55 6	43 0	42 7	44 7	42 3
April	61 6	42 7	54 10	44 11	44 6	45 11	41 11
May	64 8	44 6	56 0	45 1	44 5	47 3	43 2
June	65 4	47 5	58 7	47 5	44 6	47 5	42 10
July	65 0	50 10	59 6	48 3	46 5	48 5	42 2
August ..	67 8	53 10	60 6	46 0	48 6	50 0	43 6
September ..	62 8	47 3	64 2	46 8	52 3	43 11	41 10
October ..	66 6	47 0	60 10	46 6	47 1	39 7	40 5
November ..	69 5	50 1	60 9	47 11	45 11	40 10	40 3
December ..	67 4	52 4	61 8	49 9	44 7	41 2	39 6
The Year ..	64 5	46 10	58 8	46 2	45 4	45 1	41 7
	BARLEY.						
January ..	44 3	35 11	40 1	34 5	32 0	32 9	32 5
February ..	44 4	34 5	40 4	33 5	32 5	32 2	33 0
March	41 0	34 0	39 10	32 8	31 10	30 3	33 6
April	39 6	34 7	39 1	33 10	31 11	29 9	33 0
May	38 10	33 3	38 4	34 1	31 5	28 4	31 6
June	36 2	32 8	37 2	32 11	30 5	27 7	28 9
July	35 2	31 7	36 6	32 9	27 9	26 10	28 4
August ..	37 3	33 8	37 7	32 2	29 5	28 0	28 11
September ..	39 11	36 1	43 11	37 8	34 5	36 0	32 7
October ..	41 3	36 7	43 9	39 4	35 1	34 3	34 5
November ..	42 2	36 7	44 0	39 3	34 5	34 3	33 8
December ..	40 11	35 4	44 9	38 9	32 1	33 10	31 11
The Year ..	40 0	34 7	40 5	35 2	31 11	31 2	31 10
	OATS.						
January ..	24 0	20 8	22 2	24 2	20 1	20 5	20 7
February ..	24 3	20 2	21 11	24 5	20 6	20 11	21 4
March ..	24 7	20 11	23 3	25 1	21 7	21 2	22 0
April	24 9	21 2	23 10	25 8	22 1	21 9	21 9
May	26 0	23 0	25 4	26 7	22 10	22 5	22 6
June	27 5	23 9	26 7	28 1	23 4	23 5	22 9
July	28 0	26 1	28 9	29 10	23 7	24 8	23 4
August ..	28 8	26 9	28 7	29 0	24 0	24 4	23 5
September ..	26 11	23 5	27 7	26 7	23 1	21 11	20 10
October ..	25 8	22 3	25 3	25 3	20 0	19 7	19 8
November ..	25 11	23 5	25 4	25 7	20 4	20 4	19 7
December ..	25 2	23 4	26 1	25 1	20 3	20 10	19 4
The Year ..	26 0	22 11	25 5	26 3	21 9	21 10	21 5

TOTAL ACREAGE OF LAND UNDER CULTIVATION IN GREAT BRITAIN IN 1884.—The following appear to be the general results of the returns which have been obtained by the Agricultural Department of the Privy Council:—The total extent of land returned in 1884 as under cultivation of all kinds of crops, bare fallow, and grass amounted for Great Britain to 32,465,000 acres, exclusive of heath and mountain pasture land and of woods and plantations, thus showing an increase over the previous year of about 81,000 acres. This increase, which is again chiefly in permanent pasture, is spread over each division of Great Britain, and gives to England an additional cultivated area of 49,400 acres; to Wales 9,550 acres; and to Scotland 21,750 acres. The greater portion of this additional acreage consists of extensive tracts of land gradually reclaimed and brought into cultivation in the outlying districts of the country, many instances of which are especially noticed by the Inland Revenue officers as having occurred during the past year. The relative proportions of the whole area of cultivated land in Great Britain are this year 47·1 per cent. under permanent pasture, 26·1 per cent. under corn crops, and 10·8 per cent. under green crops. The number of separate returns furnished by occupiers of land in Great Britain, and of those where occupiers have omitted to make returns, obtained by estimates, have been this year 556,415, and 4,935 from owners of live stock only, thus showing an increase of 1,857 in the case of occupiers of land and of 93 in the case of owners of stock. The area of the land for which returns were not made, and which therefore became the subject of estimate was this year 1,470,000 acres compared with 1,427,000 in 1883, and 1,453,000 in 1882. Of this area the larger quantity, in 1884 about 96 per cent., is in England, the estimated acreage in Scotland being only 3½ per cent.

CORN CROPS.—The total area returned under wheat is this year 2,677,000 acres, an increase of nearly 64,000 acres, or 2·4 per cent. over that of the area of 1883, which was then remarked upon as being the smallest recorded since the returns were first obtained in 1866; and it is worthy of note that the year's crop has been grown on nearly a million of acres less than the crop of 1874. As regards barley, the area in 1884 was 2,168,000 acres, a decrease of 123,000 acres or 5·4 per cent. from last year, and the smallest area since 1868. Oats covered 2,915,000 acres, showing a decrease of 60,000 acres, or 2 per cent. less than in 1883, the breadth sown, however, under this crop being above that of any other year recorded since these returns have been obtained. The large importations of foreign barley and oats and the low prices obtainable are stated to have influenced the acreage under both these crops during the past year. Among minor corn crops, rye was sown on 3,700 acres less than in 1883. Beans and peas show but little variation. The total area for corn crops was 8,484,700 acres, a decrease of 133,906 acres, or 1·5 per cent from that of 1883, and 946,700 acres or 10 per cent. less than in 1874, when corn crops occupied no less than 9,431,400 acres.

GREEN CROPS.—Of the area under green crops in Great Britain in 1884 about 565,000 acres were planted with potatoes. This acreage is greater than that of 1883 by 21,600 acres, and has only been once exceeded since the Agricultural Returns were obtained, namely, in 1881, when it reached 579,000 acres. Allowing for the moderate acreage planted with potatoes in Wales, it appears that about two-thirds of the crop is grown in England, and nearly one third in Scotland. Turnips and swedes were sown on 2,027,600 acres, as compared with 2,028,900 in 1883. The acreage for mangolds was less by 2,500 acres, but vetches, lucerne, and other green crops had increased by 14,000 acres. Sugar beet occupied 812 acres, of which 643 are in Suffolk. The total area of green crops was 3,487,700 acres, an increase of 33,000 acres over 1883.

FLAX.—The acreage of flax is still diminishing, and was only 2,200 acres in 1884, against 4,300 in 1883.

HOPS.—The cultivation of hops is still increasing, and there were 69,258 acres in 1884 as against 68,016 in 1883, an increase of 1,200, but the acreage is still below that of the three years 1876–8.

ROTATION GRASSES.—Clover, sainfoin, and grasses under rotation covered 4,381,000 acres, or 14,500 acres less than in 1883, only such a variation as is common.

PASTURE AND ARABLE LAND.—The extension of permanent pasture is again remarkable, amounting to an increase of 225,000 acres over 1883, and bringing the total area up to 15,290,000 acres. The area under arable land on the other hand is this year less by 144,000 acres, about 17,175,000 acres being returned as compared with 17,319,000 acres in 1883.

ORCHARDS AND MARKET GARDENS.—Orchards in Great Britain again show an enlarged area, covering 194,648 acres, as compared with 190,710 acres in the previous year. The acreage under market gardens shows a decrease of 94 acres.

LIVE STOCK.—The returns show a large increase in cattle, sheep, and lambs, and a small decrease of 33,000 in pigs. There appears also to be a decline of 4,600 in the number of agricultural horses, attributable

to the increased use of machinery in farming, but it is counterbalanced by an increase of 8,300 unbroken horses and mares kept for breeding. As regards horned cattle there is again a satisfactory increase in each of the several classes, the total number being now 6,269,141, or 306,362 more than in 1883, and the largest aggregate figures for cattle recorded since the returns were obtained. Milch cows in Great Britain have increased in number by 3·7 per cent., cattle other than milch cows of two years of age and above number 1·3 per cent. more, and young cattle have increased by 8·9 per cent. In sheep and lambs there is the substantial addition of 1,000,000, of which sheep of one year and above contribute an increase of 436,200, and sheep under one year 563,800 head, the total number being now 26,068,354.

POULTRY.—Returns of poultry in Great Britain are given for the first time, and are at present imperfect. The figures as received show a total of 16,061,012 in Great Britain, made up of 500,770 turkeys, 888,313 geese, 2,368,390 ducks, and 12,303,539 fowls.

IRISH AGRICULTURE.—The total cultivated area in Ireland has increased, being now 15,242,837 acres as compared with 15,151,230 acres in 1883, and 15,212,390 in 1882. Corn crops, green crops, and flax show a decrease. As regards corn crops, there appears a diminution of 25,700 acres, or 27·3 per cent. in the acreage under wheat, which was sown only on 69,000 acres, against 94,000 acres in 1883. Barley shows a decline from 184,000 acres to 167,000 acres, and oats, the most important crop, were less by 33,000 acres, the area being now 1,347,000 acres, against 1,381,000 acres in the preceding year. Beans and peas decreased by 2,400 acres, and rye by 100, showing a total diminution of 79,000 acres, or nearly 5 per cent. in the area under cereal crops. The area under potatoes, which covered 806,000 acres in 1883, was reduced by 7,700 in 1884. Turnips were less by 2,700 acres, and mangold and beetroot by 3,400 acres. The land under cabbage increased by 3,800 acres, and that under other green crops by 1,400 acres, leaving a net decrease of about 8,800 acres under these crops.

AGRICULTURAL SUMMARY FOR UNITED KINGDOM.—Summing up then, the figures for the whole of the United Kingdom, including the Isle of Man and the Channel Islands, the variation is important as regards the total cultivated area, which has increased by 173,000 acres. Corn crops have a less acreage, while green crops have a larger one. Rotation grasses show comparatively little change, but in permanent pasture there is a remarkable increase, again due to additions in each division of the United Kingdom. Cattle and sheep have substantially increased, but in pigs there is a decrease both in Great Britain and in Ireland.

CROPS IN THE UNITED KINGDOM.—The following table shows the acreage under each kind of crop, bare, fallow, and grass, in the United Kingdom, including Isle of Man and Channel Islands, in 1883 and 1884:—

	1883.	1884.
	Acres.	Acres.
Total area of land and water	77,799,793	77,799,793
Total area under crops, &c.	47,667,274	47,840,977
Corn crops:—		
Wheat ..	2,713,282	2,750,588
Barley or bere	2,486,137	2,346,041
Oats	4,370,076	4,276,866
Rye	58,082	54,234
Beans	458,440	454,839
Peas	240,501	230,696
Total ..	10,326,518	10,113,264
Green crops:—		
Potatoes ..	1,359,726	1,373,835
Turnips and swedes	2,346,216	2,342,577
Mangold ..	368,811	363,031
Carrots ..	17,184	17,062
Cabbage, Kohl-Rabi, and rape	187,685	192,397
Vetches and other green crops (except clover or grass)	429,312	444,958
Total ..	4,708,934	4,733,860
Clover, sanfoin, and grasses under rotation	6,371,799	6,392,402
Permanent pasture or grass not broken up in rotation (exclusive of heath or mountain land)	25,288,520	25,667,206
Flax	100,262	91,444
Hops	68,016	69,259
Bare fallow or uncropped arable land	803,225	773,542

4. POPULATION, PUBLIC EMPLOYMENT, AND VITAL STATISTICS.

Population of the United Kingdom in 1883 and 1884.—The estimated population of the United Kingdom in the middle of 1883 and 1884, exclusive of the Army, Navy, and Merchant Seamen abroad was as follows:—

	1883.	1884.
England and Wales ..	26,770,774	27,132,449
Scotland ..	3,825,744	3,866,521
Ireland ..	5,015,328	4,952,895
Totals ..	35,611,846	35,951,865

Estimated growth of population .. 340,019

Births, Marriages, and Deaths.—The following table shows the total number of births, deaths, and marriages from 1869 to 1883:—

England and Wales.

Years.	Births.	Deaths.	Marriages.
1869	773,381	494,828	176,970
1870	792,787	515,329	181,655
1871	797,428	514,879	190,112
1872	825,907	492,265	201,267
1873	829,778	492,520	205,615
1874	854,956	526,632	201,010
1875	850,607	546,453	201,212
1876	887,968	510,315	201,874
1877	888,200	500,496	194,352
1878	891,906	539,872	190,054
1879	880,389	526,255	182,082
1880	881,643	528,624	191,965
1881	883,642	491,935	197,290
1882	889,018	516,654	204,405
1883	889,815	522,662	205,814

Scotland.

1869	113,395	75,789	22,083
1870	115,423	74,067	23,788
1871	116,127	74,644	23,966
1872	118,873	75,741	25,580
1873	119,738	76,857	26,730
1874	123,795	80,676	26,247
1875	123,693	81,785	25,921
1876	126,749	74,122	26,503
1877	125,824	73,946	25,790
1878	126,707	76,775	24,333
1879	125,736	73,329	23,462
1880	124,652	75,795	24,489
1881	126,214	72,301	25,948
1882	126,182	72,966	26,574
1883	124,462	76,867	26,855

Ireland.

Years.	Births.	Deaths.	Marriages.
1869	145,659	89,573	27,277
1870	150,151	90,695	28,835
1871	151,665	88,720	28,960
1872	149,292	97,577	27,114
1873	144,377	97,537	26,270
1874	141,288	91,961	24,481
1875	138,320	98,114	24,037
1876	140,469	92,324	26,388
1877	139,659	93,543	24,722
1878	134,117	99,629	25,284
1879	135,328	105,089	23,254
1880	128,086	102,906	20,363
1881	125,847	90,035	21,826
1882	122,648	88,500	22,029
1883	118,224	96,388	21,490

Police Force in the United Kingdom.—The strength of the Police Force in 1883 was as follows: in England and Wales, 34,488; Scotland, 3,663; Ireland, 15,179. In 1873 the numbers stood thus: England and Wales, 28,550; Scotland, 3,029; Ireland, 12,957.

The Army.—The strength of the Regular Army at home and abroad in 1883 was as follows:—Officers: at home, 3,714; abroad, 3,479; total, 7,193. Non-commissioned officers and men: at home, 86,357; abroad, 88,421; total, 174,778. Total of officers and men: at home, 90,071; abroad, 91,900. General total, 181,971.

A Census of Children.—The Report of the Education Department contains the following table of the number of children of what is technically termed the school age, viz., from 5 to 13, with the percentage of them at each age found on the register of rate-aided schools:—

Age.	No. of Children.		Percentage on Registers.	
	1882.	1883.	1882.	1883.
5– 6	575,685	583,457	72·95	72·84
6– 7	561,981	569,568	85·14	87·05
7– 8	548,415	555,818	91·00	91·27
8– 9	535,117	542,341	91·52	93·38
9–10	522,177	529,227	93·16	93·53
10–11	509,745	516,626	89·62	93·09
11–12	497,815	504,536	83·45	83·31
12–13	487,069	493,644	66·30	67·53
	4,238,004	4,295,217	84·21	85·31

5. CRIME, PAUPERISM, AND ACCIDENTS.

CRIMINAL CENSUS. — The judicial statistics for 1883 give the following estimate of the criminal classes in England and Wales for 1882-3:—Criminals at large (known thieves and depredators, receivers of stolen goods and suspected persons), 38,420; in local prisons (exclusive of debtors and naval and military prisoners), 16,751; in convict prisons, 9,640; in reformatories, 4,517; total, 69,328. This shows a decrease of 574 or 0·8 per cent. on 1881-2, following a decrease of 1,735 or 2·4 per cent. in 1881-2, as compared with 1880-1.

CRIMINAL RESORTS. — The number of houses known to the police in Great Britain as being used for the reception of stolen goods in 1882-3 was 885. The houses resorted to by thieves, depredators, and suspected persons were classified thus:—Public-houses, 396; beer-shops 307; coffee-shops, 95; giving a total of 798. In addition to these, there were 2,164 other houses of known or suspected bad character, bringing the total up to 3,847 as compared with 4,056 in 1881-2 and 4,052 in 1880-1, a decrease of 209 or 5·1 per cent on 1880-1.

A YEAR'S CRIME IN GREAT BRITAIN.—The following are some of the principal offences as shown in the lists of crimes detected in 1882-3:—Murder, 165; attempts to murder, 45; shooting at, wounding, stabbing, &c., 591; manslaughter, 252; concealment of birth, 86; unnatural offences, 111; rape, 243; assaults with intent, 399; assaults, 691; burglary and housebreaking, 3,218; breaking into shops, warehouses, &c., and attempts, 2,372; robbery and attempts with violence, 408; cattle stealing, 43; horse stealing, 305; sheep stealing, 224; larcenies, &c., 33,519. The total number of indictable offences in 1882-3 was 49,534 as against 52,180 in 1881-2, a decrease of 2,646.

METROPOLITAN POLICE IN 1883.—Sir E. Y. W. Henderson, the Commissioner of Police for the Metropolis, reports that during the year 2,776 persons were arrested for assaults, more or less serious, on police officers, a decrease of 805 on the previous year; on three occasions firearms were used, but in no case fatally. In one case the man arrested was found to be insane. The total number of offences for which apprehensions were effected increased from 78,416 in 1882 to 79,373 in 1883. Of these 19,487 were charged as drunk and disorderly, being an increase of 233 cases over the previous year.

DRUNKENNESS. — The cases of simple drunkenness charged in the Metropolitan Police District increased from 7,042 in 1882 to 7,058 in 1883, while disorderly characters decreased from 5,392 in 1882 to 4,881 in 1883. Practically there is no striking alteration in the number of cases of drunkenness and disorder which come under the notice of the police. The average proportion per 1,000 of the estimated population of persons apprehended for drunkenness and disorderly conduct from 1860 to 1870 was 5·576. From 1870 to 1880 it increased to 7·156, and the average for the past four years has been 5·644. The proportion was 5·269 in 1882, and 5·264 in 1883. The police now do not arrest for simple drunkenness, and the result has been during the last three years to limit the number of drunken persons taken by the police to cases of absolute incapacity, and thereby to make an apparent diminution of drunkenness.

FELONIES, BURGLARIES, AND LARCENIES. —The total number of felonies committed in the metropolis in 1883 was 22,979, a decrease of 1,775. The apprehensions were 13,865, a decrease of 482. There was a decrease in the number of burglaries from 437 in 1882 to 331 in 1883, and the apprehensions decreased from 153 to 135. Housebreaking, breaking into shops, &c., decreased from 1,764 in 1882 to 1,230 in 1883, while the apprehensions decreased from 170 to 142. The number of cases of burglary and housebreaking through doors and windows, &c., left open or insecure shows a decrease from 1,047 in 1882 to 685 in 1883, while the number of larcenies through doors or windows left open have decreased from 3,436 in 1882 to 3,166 in 1883. Repeated cautions have been given to householders in the hopes of making them more careful in this respect. On the whole, the number found open by the police increased from 26,097 in 1882 to 26,326 in 1883. 1,004 houses with no person in charge were entered by thieves and robbed. Larceny from the person decreased from 2,752 in 1882 to 2,597 in 1883. Larcenies by servants increased from 2,085 to 2,158, and "other larcenies" decreased from 16,247 to 15,331, and the apprehensions from 9,298 to 9,089. The total value of property stolen was 116,329*l*., a decrease of 42,959*l*. over 1882; the value of property recovered was 27,370*l*., so that the total loss was only 88,959*l*. in 1883, as against 96,066 in 1882, a decrease of 7,107*l*.

CAPITAL PUNISHMENT.—The change which has occurred in our criminal procedure during the last 50 years is illustrated in a striking manner by the returns relating to capital punishment and life sentences given in the Reports of the Commissioners of Prisons and the Directors of Convict Prisons. In 1833 there were

931 persons sentenced to be hanged, and 783 to transportation for life; only 33 were actually executed. In 1883 there were only 22 sentenced to death, of whom 12 were executed and 10 were sentenced to penal servitude for life. The number of sentences to death has decreased in a very marked manner since 1861, when murder and treason were made the only crimes for which capital punishment could be inflicted, but the number of sentences actually carried in execution has increased in the proportion of 10 to 13 since the amelioration of our criminal code in 1838, which limited the number of capital crimes; but as the population has increased in the same period by about 50 per cent., it may be said that the proportion of executions to population has not varied.

PENAL SERVITUDE.—The Directors of Convict Prisons say that the number of sentences of penal servitude passed in England and Wales and Scotland in 1883 was lower than in any previous year on record except 1882, which it slightly exceeded, and "the steady decrease in the number of sentences of penal servitude is still continuing." The average number of sentences in the five years ending 1859 was 2,589; in 1864, 2,800; in 1869, 1,978; in 1874, 1,622; in 1879, 1,633; and in the four years ending in 1883, 1,447. During the 24 years in which the number of sentences has so largely decreased the population has increased from 19,250,000 to 26,250,000.

FLUCTUATIONS IN THE PRISON POPULATION.—Diagrams printed with the reports of the Commissioners of Prisons afford a convenient view of the fluctuations in the population of the local prisons of England and Wales, and they show that during the past 30 years they have risen and fallen in cycles of six or eight years. They attained high levels in 1857, 1863, 1869, and 1877, with intermediate periods, during which the numbers have touched low levels; but during the last seven years, when, according to these precedents, the numbers should have again approached a very high level, they have, on the contrary, fallen to and stood at a very low level, and show no tendency to rise. The unusually long cycle of falling or low numbers commenced with the years 1877–78 (when they stood as high as about 21,000), in which the Prisons Act, transferring the charge of local prisons to Government came into operation, and they have during the past year touched the lowest level recorded since 1861, viz., 17,194. This satisfactory condition of things continues up to the most recent dates, for we find that "the numbers in May, June, and July, of the year 1884 were lower than in the same months of any of the years since we had charge of the prisons." This course of events is a curious contrast to that which followed the prison legislation which last preceded that of 1877, for we find that the Prisons Act, 1865, was followed by a rise in the prison population for the next three years. The continued diminution in the number of crimes for which penal servitude has been awarded has, of course, tended to decrease the number which forms the population of our convict prisons, and it was difficult to reconcile this evident fact with the statistics, which showed that up to 1883 the number of prisoners in convict prisons in England and Wales showed a small but continuous increase. The facts are, however, not inconsistent, for the discrepancy is due to the circumstance that an appreciable number of penal servitude convicts do not come under the return of population of English convict prisons (there were 1,309 in prison in Western Australia in 1869), and if these are taken into account there appears to be, as would be expected, a considerable decrease in our convict population, which, in 1869, numbered 11,660, but on March 31, 1884, only 9,942; the females on the same date numbered 1,082, but in 1872 numbered 1,646. The decrease in 1883 was largely caused by the infliction of sentences of five years instead of seven years, which, if continued will, of course, permanently lower the convict prison population, and that considerably.

THE AGE OF CRIMINALS.—The Prisons Commissioners have in recent reports pointed out that proportionally the decrease in the number of younger criminals is larger than in the older. In their sixth report they say:—"The decrease among those under 30 years of age formed 55·1 per cent. of the whole, and among those over 30, 46·9 per cent.," and also that "the number under 16 years of age in local prisons on 31st March, 1880, was 429, while on 31st March, 1884, it was 268."

DURATION OF SENTENCES.—Out of the 9,540 prisoners who on March 31, 1884, formed the population of our convict prisons, about 6,298 were under sentences of five and seven years; only 105 had sentences of six years. Of the remaining 3,137, 2,227 had sentences of 10, 15, or 20 years, and 301 for life. The remaining possible terms of years were inflicted only on 814; thus there was only one for each of the terms of 11, 13, 17, and 19 years, five were enduring nine years, while 1,515 were suffering 10 years. The Commissioners of Prisons give a statement of the average lengths of sentences of prisoners in each of the prisons, and from this statement they say it can be shown, *a*, that the average length of all sentences was 176·5 days; *b*, that the six prisons in which the sentences were longest were, Winchester, 303 days; Coldbath-fields, 280·5 days; Bedford, 252 days; Swansea, 238 days; Exeter, 237 days; Warwick, 235 days (we have omitted small decimal figures); *c*, that setting aside certain very small prisons, the

six prisons in which sentences were shortest were, Bristol, 118 days; Nottingham, 117·7 days; Newcastle, 103 days; Plymouth, 102·5 days; Carlisle, 101 days; Lancaster, 85·5 days; *d*, that among the larger prisons, Winchester, Coldbath-fields, Warwick, Maidstone, and Chelmsford have the longest sentences, while Stafford, Holloway, Westminster, Birmingham, Manchester, and Newcastle have the shortest.

LIFE IN PRISON.—The conditions of life are exceptionally healthy in a prison, the death rate in the local prisons being only about 8 per 1,000 since the Commissioners had charge of them. An analysis of the convict prison population on an average of the ten years, shows that taking the total population at 10,000—they are recruited by 2,000 received yearly—only 281 fail to earn, or by misconduct forfeit, the marks by which they can earn some remission of their sentences; 1,600 are discharged on remission, or in a small number of cases for other reasons, before their sentences have expired; 129 die each year; and on an average one escapes.

PRISON DISCIPLINE.—The Commissioners show a very remarkable improvement in discipline in the local prisons since the Government took charge of them, and it is very noteworthy that this is not the result of increased severity of punishment, for "the occasions on which the more severe forms of punishment were found necessary is less in a marked degree than formerly." Taking for facility of comparison the year in which the population of the prisons when under the local authorities most nearly approached that of 1883, we find that in that year, 1872, the punishment cells were used in nearly 15,000 cases, whereas last year they were used in 1,438 cases; dietary punishments in the former year numbered 37,401, last year nearly 17,000; and the discipline is maintained by the system of enabling prisoners by good conduct and industry to gain, or by bad conduct and idleness to forfeit, certain "stage privileges." On the whole, the daily average of punishment per 1,000 prisoners, which was formerly about 8·4 per 1,000, was last year 5·8 per 1,000. The daily average number of cases of corporal punishment was under the local authorities represented by the minute number 0·28 per 1,000 prisoners, and under the Government by the still more minute figure 0·23 per 1,000.

MILITARY AND NAVAL CONVICTS. — A considerable number of the inmates of our convict prisons are furnished by the Army and Navy, and the number of soldiers who received the sentence of penal servitude has during the last few years increased very largely. Between 1870 and 1880 the number furnished annually varied between 44 and 69, but in the year 1880 they rose to 104, in 1882 to 149, and it appears that at the time of the issue of the last report of convict prisons 311 soldiers, 33 sailors, and 6 marines were in convict prisons, of whom much the largest part were there for crimes or offences made punishable by the Army Discipline Act, and not according to the ordinary law of the kingdom.

LOST OR MISSING.—12,411 children under 10 years of age and 3,844 adults were reported to the Metropolitan Police in 1883 as lost or missing; 6,919 children and 839 adults were found by the police. The remainder returned home or were found by their friends, except 52 adults, who committed suicide. The remaining 130 adults and 6 children have never been traced. 35 bodies of persons found dead and unknown were photographed, but not identified.

STREET ACCIDENTS AND FURIOUS RIDING OR DRIVING.—The number of fatal accidents in the London streets which came under police notice decreased from 147 in 1882 to 106 in 1883, and according to the more comprehensive returns of the Registrar-General, from 271 in 1882 to 222 in 1883. The number of persons injured in the streets decreased from 3,589 to 3,532. A large proportion of the sufferers are not the foot passengers in the streets, but the persons riding and driving. Proceedings were taken against 1,091 persons for furious riding or driving; 985 were convicted and 106 discharged. 422 of these persons so convicted were drivers of hackney carriages.

COMMON LODGING HOUSES.—During the year in the Metropolis 124 new houses were registered, 116 re-opened, and 314 closed, thus leaving 1,104 registered houses under control at the end of the year, the same being apportioned to accommodate 29,386 lodgers. This gives a decrease of 74 houses and an increase of 2,218 lodgers on the numbers of the preceding year.

545 keepers have been served with notices to register their houses. 672 non-registered houses are periodically visited to enforce the Acts. 36 keepers of registered and 12 of non-registered houses were summoned; the first for various infringements of the Acts and regulations, and the latter for receiving lodgers and refusing to register their houses after receiving notice, all of whom, with the exception of three, were convicted and fined.

THE WRECKS OF 1882–3. — From the Wreck Register published by the Board of Trade, it appears that during the year ended June 30, 1883, there were 3,654 shipping casualties of all sorts around the British Isles, a reduction of six wrecks on the preceding year; while the number of lives lost was 1,020, or 77 less than during the previous year. This total of 3,654 wrecks comprises every description of casu-

alty—wrecks resulting in total loss, partial loss, collisions, &c.—but there has been a considerable decline in the most serious classes of accidents, the number of total losses having fallen from 606 to 551, so that the remaining 3,103 cases may be considered as less important. The number of wrecks involving loss of life fell from 235 to 220, although the number of vessels entering and leaving our ports increases year by year. Last year no fewer than 677,551 vessels, with a tonnage of 145,995,580, came and went, and it is estimated that they had on board at least 4,000,000 people.

Wrecks on the British Coast 1854–83.—The following is a return of the number of shipwrecks which have occurred each year on our shores since 1854:—1854 (last six months), 458; 1855, 1,141; 1856, 1,153; 1857, 1,143; 1858, 1,170; 1859, 1,476; 1860, 1,379; 1861, 1,494; 1862, 1,488; 1863, 1,664; 1864, 1,390; 1865, 1,656; 1866, 1,860; 1867, 2,090; 1868, 1,747; 1869, 2,114; 1870, 1,502; 1871, 1,575; 1872, 1,958; 1873 (first six months), 967; 1873–4, 1,803; 1874–5, 3,590; 1875–6, 3,757; 1876–7, 4,164; 1877–8, 3,641; 1878–9, 3,002; 1879–80, 2,510; 1880–81, 3,575; 1881–82, 3,660; and 1882–3, 3,654. This gives a total of 62,730 wrecks, resulting in the loss of 21,651 lives.

Wrecks Classified.—Out of the 3,654 casualties 685 were collisions and 2,969 wrecks of other descriptions. Of the latter, 495 resulted in total loss, 657 in serious damage, and 1,817 in minor accidents; so that not only were there five fewer wrecks other than collisions reported in 1882–3 than in 1881–2, but the serious accidents dropped from 1,245 to 1,152. Of the 2,969 casualties other than collisions, 2 627 befel vessels belonging to this country and the colonies, and 342 occurred to foreign ships. The British vessels were employed as follows:—1,677 in our coasting trade. 715 in the oversea home and foreign trade, and 235 as fishing vessels. There were 14 casualties to ships belonging to foreign countries and States employed in our coasting trade, 273 to foreign vessels bound to or leaving British ports, and 55 to foreigners not trading to or from our shores.

Localities of Wrecks.—The localities of the wrecks, excluding collisions, were—east coast of England, 950; south coast, 496; west coasts of England and Scotland and east coast of Ireland, 1,084; north coast of Scotland, 93; east coast of Scotland, 107; and other parts, 239. Total, 2,969.

Causes of Wrecks.—The number of total wrecks of British vessels on our shores, excluding collisions, caused either by vessels being unseaworthy, or by the officers, pilots, or crews being ignorant or careless, rose last year, in the first case, from 20 to 33, and in the second case from 55 to 68; those arising from other or unknown causes having increased during the same period from 93 to 101, whereas the total losses occasioned by stress of weather happily fell from 276 to 197.

The number of casualties arising during the year from the same causes and resulting in serious damage is as follows:—Through defects, 21; errors, 109; stress of weather, 275; breakdown of machinery and explosions, 124; other causes, 52: while the cases of minor damage were—through defects, 89; errors, 191; breakdown of machinery and explosion, 112; stress of weather, 1,031; and other causes, 224.

Ages of Wrecked Vessels.—Excluding foreign ships and collisions, casualties befel 173 nearly new ships, 335 ships from three to seven years of age, 525 from seven to 14, and 979 from 15 to 30 years old. Next come 435 old ships from 30 to 50 years of age, and then follow 52 between 50 and 60 years old, 28 from 60 to 70, 12 from 70 to 80, four from 80 to 90, one from 90 to 100, and two more than a century old, the age of 83 of these old vessels being unknown. Not taking into account the collisions, 692 steamships and 2,277 sailing vessels were lost on our shores in the year 1882–3.

Loss of Life at Sea.—The Register shows a decrease in the number of lives lost during the year as compared with that of the preceding 12 months. Last year the number of lives lost was 1,097, as against 1,020, or a decrease of 77. Of these 1,020 lives, 65 were lost in foundered vessels, 126 through collisions, 465 in vessels stranded or cast ashore, and 293 in missing vessels. The remaining 71 lives were lost from miscellaneous causes, such as being washed overboard, explosions, &c. Of the 220 vessels out of which the 1,020 lives were lost, 187 were British, from which 843 persons were drowned, and 33 foreign, involving the loss of 177 lives. The loss of life, collision cases being included, was thus distributed:—East coast of England, 466, or 177 more than the previous year; south coast, 98, or 31 less than the year before; west coasts of England and Scotland and east coast of Ireland, 306, being an increase of 20 in the year 1881–2; north coast of Scotland, 46, a decrease of 36 as compared with the previous 12 months; east coast of Scotland, 87, or 152 less than the year before; other parts, 17—total, 1,020. The east coast of England has as usual proved by far the most fatal to human life.

Lives Saved at Sea.—The National Lifeboat Institution was instrumental in saving 21,167 lives during the year ended 30 June last.

6. EDUCATION, SCIENCE, AND ART.

Elementary Schools.—The Committee of Council on Education, in their last annual report, state that in the year ending 31st August, 1883, the inspectors visited 18,540 day schools in England and Wales, to which annual grants were made, containing 27,330 departments under separate head teachers, and furnishing accommodation for 4,670,443 scholars. There were on the registers of these schools the names of 4,273,304 children, of whom 1,336,929 were under 7 years of age; 2,743,383 between 7 and 13; 150,245 between 13 and 14; and 42,747 above 14. Of these scholars 3,705,388 were present on the day of the inspectors' visit to their respective schools, and 3,127,214 were, on an average, in daily attendance throughout the year. In the schools inspected under the Code of 1881 (8 months, September to April) 2.191,955 scholars having made the requisite number of attendances were qualified to bring grants to their schools, 514,742 (being under 7 years of age) without individual examination, and 1,677,213 (above 7) on passing a satisfactory examination in reading, writing, and arithmetic. In the schools inspected under the Code of 1883 the number of scholars whose names had been on the school registers for the last 22 weeks of the school year was, in infant schools and classes, 294,707; in schools and classes for older scholars, 712,678. No grant was directly payable on the examination of the scholars in the infant schools and classes, but 31,093 being upwards of 7 years of age were individually examined in Standards I and II, while the number of older scholars presented for examination was 665,279. Our returns, therefore, for the whole year show that 2,276,014 were actually presented for individual examination, and while of these 1,483,269 passed the prescribed tests without failure in any one of the three subjects, 89·14 scholars out of every 100 examined passed in reading, as compared with 80·22 in the previous year; 82·03 as against 81·92 in writing; and 77·51 as against 77·27 in arithmetic. While the increase of the population during the year is estimated at 1·35 per cent., the accommodation has increased by 132,123 school places (or 2·91 per cent.); the scholars on the registers by 83,692 (2·0 per cent.); the average attendance by 112,063 (3·7 per cent.); and the number of children individually examined by 156,640 (or 7·39 per cent.). The local effort which has resulted in this improvement may be measured by the continued support derived from voluntary contributions (717,089*l.* from 267,821 subscribers), and by an advance in the contributions from rates to the maintenance of Board schools from 808,121*l.* to 840,947*l.* The school pence have risen from 1,585,928*l.* to 1,659,743*l.* The annual Government grants to elementary day schools rose in the year from 2,393,394*l.* to 2,522.541*l.*, or from 15*s.* 10¾*d.* to 16*s.* 1¼*d.* per scholar.

Night Schools.—The night schools examined during the year ending 31st August, 1883, were 932 in number; 28,293 scholars above 12 years of age were, on an average, in attendance each night; 32,937 scholars were qualified by attendance for examination. Of these, 22,546 were actually examined, and out of every 100 scholars so examined, 90·77 passed in reading, 60·41 in writing, and 46·72 in arithmetic

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Training Colleges. — The inspectors found 37,280 certificated teachers at work in the aided schools which they visited, while the 41 training colleges, from which the supply of such teachers is mainly recruited, were attended in 1883 by 3,138 students. These students (with a few exceptions), and 2,213 acting teachers, were examined for certificates in December, 1883. At Midsummer, 1883, 5,194 candidates were examined for admission to the 1,633 vacancies declared in the training colleges, of whom 3,364 passed creditably, and 1,628 are now in their first year of residence, along with 1,586 students of the second year.

Annual Parliamentary Grants for Education in England from 1833 to 1884.

1833–1838.	£20,000	1866 . .	£694.530
1839–1841.	30,000	1867 . .	705,865
1842–1844.	40,000	1868 . .	781,324
1845 . .	75,000	1869 . .	840,711
1846–1850.	115,000	1870 . .	914,721
1851 . .	150,000	1871 . .	1,458,402
1852 . .	160,000	1872 . .	1,551,560
1853 . .	260,000	1873 . .	1,299,803
1854 . .	263,000	1874 . .	1,356,852
1855 . .	396,921	1875 . .	1,548,563
1856 . .	451,213	1876 . .	1,707,055
1857 . .	541,233	1877 . .	1,910,000
1858 . .	663,435	1878 . .	2,149,208
1859 . .	836,920	1879 . .	2,481,168
1860 . .	798,167	1880 . .	2,535,967
1861 . .	803,794	1881 . .	2,683,958
1862 . .	842,119	1882 . .	2,749,863
1863 . .	804,002	1883 . .	2 938,930
1864 . .	705,404	1884 . .	3,016,167
1865 . .	693,078		

Progress of Education in Great Britain.—The following table exhibits the progress of education in Great Britain in schools under Government inspection from 1869 to 1883, distinguishing England and Wales from Scotland:—

Years ended 31st August.	Number of Schools Inspected.	Number of Children who can be Accommodated.	Average number of Children in Attendance.	Number of Children present at Inspection.
	ENGLAND and WALES (including ISLE OF MAN SCHOOLS from 1869 to 1877; and ROMAN CATHOLIC SCHOOLS in SCOTLAND, from 1869 to 1874).			
1869	8,592	1,838,416	1,153,572	1,448,299
1874	13,084	2,952,479	1,710,806	2,093,180
1876	14,875	3,483,789	2,007,732	2,448,299
1877	15,187	3,653,418	2,150,683	2,633,198
1878	16,293	3,942,337	2,405,197	2,944,127
1879	17,166	4,142,224	2,594,995	3,122,672
1880	17,614	4,240,753	2,750,916	3,268,147
1881	18,062	4,389,633	2,863,535	3,372,990
1882	18,289	4,538,320	3,015,151	3,542,742
1883	18,540	4,670,443	3,127,214	2,705,388
	SCOTLAND (exclusive of ROMAN CATHOLIC SCHOOLS, included above). from 1869 to 1883.			
1869	1,745	237,928	179,214	191,203
1874	2,587	391,592	274,588	314,576
1876	2,912	462,986	332,545	382,224
1877	2,931	535,949	360,413	417,699
1878	2,998	563,481	377,257	439,021
1879	3,003	585,629	385,109	447,801
1880	3,056	602,054	404,618	470,581
1881	3,074	612,483	409,966	475,021
1882	3,073	619 086	421,265	490.372
1883	3,090	633,701	433,137	498,514
	TOTAL FOR GREAT BRITAIN.			
1869	10,337	2,076,344	1,332,786	1,639,502
1874	15,671	3,344,071	1 985,394	2,407,756
1876	17,787	3,946,775	2,340,227	2,830,523
1877	18,118	4,189,367	2,511,096	3,050,897
1878	19,291	4,505,818	2,782,454	3,383,148
1879	20,169	4,727.853	2,980,104	3,570,473
1880	20,670	4,842,807	3,155,534	3,738,728
1881	21,136	5,002,116	3,273,501	3,848,011
1882	21,362	5,157,406	3,436,416	4,033,114
1883	21,630	5,304,144	3,560,351	4,203,902

SALARIES OF TEACHERS.—The average salary of a certificated master, which in 1870 was 95*l.* 12*s.* 9*d.*, is now 119*l.*; that of a schoolmistress was 57*l.* 16*s.* 5*d.* in 1870, and is now 72*l.* 1*s.* 9*d.* In addition to their other emoluments, 6,138 out of 14,827 masters, and 5,317 out of 21,270 mistresses, are provided with residences free of rent; these averages are calculated upon the whole of the certificated teachers, whether principal or assistant. In regard to the principal teachers in the metropolitan district, the Committee of Council report that in the past year the average salary of 391 masters in Voluntary schools was 152*l.* 4*s.*, and that of 294 masters in Board schools 253*l.* 13*s.* 10*d.*: while 560 schoolmistresses in Board schools received an average income of 176*l.* 7*s.* 5*d.*, as compared with 87*l.* 1*s.* 10*d.* that of 821 teachers in Voluntary schools. The salaries of 9 masters in Voluntary schools, and of 77 in Board schools, amounted to 300*l.* a year and upwards; while 4 schoolmistresses in Voluntary, and 179 in Board schools, had salaries of 200*l.* and upwards. There is a great and increasing proportion of female teachers in elementary schools. In 1869, for every 100 teachers of each class, 48 certificated teachers, 60 assistant teachers, and 57 pupil teachers, were females; these proportions have increased in 1882 to 59 certificated teachers, 68 assistant teachers, and 71 pupil teachers. The number of female pupil teachers in 1869 was 7,273; they now number 18,725, an increase of 157 per cent. The male pupil teachers, who numbered 5,569 in 1869, have increased to 7,703, or by about 38 per cent.

ELEMENTARY SCHOOLS (RELATIVE COST).—The following table shows the amount of the income, expenditure, and grant of the Voluntary and Board schools in certain localities during 1883:—

	Income per scholar in average attendance from		Expenditure per scholar in average attendance.		Grant earned per scholar in average attendance
	School pence.	Voluntary contributions.	For salaries.	Total.	
Voluntary Schools.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Church of England	0 10 6½	0 7 3½	1 7 6½	1 15 0½	0 15 10
Wesleyan..	0 15 11¼	0 2 5	1 8 1½	1 14 11¼	0 16 6½
Roman Catholic..	0 9 1	0 6 3½	1 1 9½	1 10 9	0 15 8¼
British and Undenominational	0 13 5	0 5 6½	1 8 6	1 16 3	0 16 3
London	0 13 4	0 9 2¼	1 10 2¾	2 1 5	0 16 4¼
England and Wales	0 11 1	0 6 8¾	1 7 3	1 14 10½	0 15 11
		Rates.			
Board Schools.					
Birmingham	0 6 10	0 12 11½	1 10 6¾	1 18 3½	0 17 9¾
Bradford	0 15 4¾	0 15 2¾	1 16 6¾	2 7 7¾	0 17 3¾
Hull	0 9 6	0 3 10½	1 4 3½	1 9 5	0 16 1¾
Leeds	0 11 0½	0 15 5	1 12 4½	2 1 9¾	0 17 3
Liverpool..	0 13 10	0 10 8	1 11 3	2 0 10	0 17 2
London	0 8 2¾	1 10 7½	2 3 0½	2 15 3¼	0 17 2½
Manchester	0 15 9	0 11 7½	1 10 2¼	2 3 0¾	0 18 1¾
Sheffield	0 13 7½	0 11 0½	1 10 7	2 1 4½	0 16 11
England and Wales	0 9 5¼	0 16 1	1 12 0¼	2 1 3½	0 16 6

SCIENCE SCHOOLS.—The Report of the Science and Art Department of the Committee of Council on Education gives the following table of these schools, taking each institution in which instruction is given in science as a science school, whether, as in some cases, there was but one class in one subject; or, as in others, there were more or less complete courses of study in different branches of science; there were in—

	No of Schools.	No. under Instruction.
1874	1,336	53,050
1875	1,299	52,669
1876	1,426	57,988
1877	1,348	55,927
1878	1,297	57,230
1879	1,355	59,519
1880	1,391	60,871
1881	1,360	61,177
1882	1,402	68,581
1883	1,421	72,054

Of the 1,421 schools examined, 1,088 were in England and Wales, 167 in Scotland, and 166 in Ireland. They consisted of 5,281 separate classes in different branches of science, and the number of students who came up for examination from them was 47,882. In addition to these, 6,322 self-taught students and pupils from classes not entitled to claim payments on results presented themselves for examination.

NATIONAL ART TRAINING SCHOOL.—In 1882–83 the number of students in training to become art teachers and of national scholars in training to become designers or art workmen were 34 and 17 respectively, most of whom were selected from provincial schools, and received allowances to enable them to study in the training school and museums at South Kensington. The number of students admitted on payment of half fees was 32; and 102 others, including the students in training, the national scholars, and 19 men of the corps of Royal Engineers, received gratuitous instruction. At the annual examinations in advanced or third grade art subjects, held in 1883, 25 students of the training school obtained 27 certificates qualifying them to earn payments from the department as teachers in Schools of Art. The students of the school won 3 gold, 23 silver, 30 bronze medals, and 36 Queen's prizes in the National Competition, and 130 third grade prizes for works sent in for examination. The total number of students was 710, of whom 310 were males and 400 females, being a decrease of 18 on the number in the previous year; and the fees received amounted to 2,987*l.* 4*s.* 9*d.*, the day students paying 2,717*l.* 2*s.*, and the evening students 270*l.* 12*s.* 6*d.*, being a decrease of 259*l.* 18*s.* 3*d.* on last year.

PROVINCIAL MUSEUMS.—Out of the vote of 1,500*l.* for aid to museums in connection with the department or established under the Public Libraries Act, the following museums have received grants, amounting in the aggregate to 1,019*l.* 16*s.* 6*d.*, towards the purchase of electrotype reproductions, fictile ivories, plaster casts, photographs, textile fabrics, and original art objects:—Birmingham School of Art; Bolton, Chadwick Museum; Bradford Public Art Museum; Glasgow Corporation Art Galleries; Manchester Art Gallery; and Nottingham Corporation Museum.

ART AND SCIENCE CLASSES.—The number of art classes examined in May, 1883, was 499, and the number of students in these classes was 26,424; the corresponding numbers in 1882 having been 473 classes and 19,259 students. The number of works sent up from these classes in April, 1883, was 155,952, by 12,025 students; and 67,494 drawings of buildings and machines were also received for examination from 300 science classes. The examinations in 2nd grade drawing were attended by 11,761 students of art classes, of whom 3,929 were successful, and 883 obtained prizes, while 173 students in art classes and 211 students in science classes took prizes for works sent up for inspection. the total amount of the grants to art and science classes on the results of the art examinations was 7,133*l.*, the corresponding total of 1881-82 having been 6,805*l.*

SCHOOLS OF ART.—Eight new schools of art were established during the year 1882-83, and the total number of schools of art throughout the kingdom in which advanced as well as elementary art instruction was given was 177, with 15 branch classes. The total number of students in these schools and branch classes was 35,909, as against 169 schools, 13 branch classes, and 33,729 students in 1881-82, being an increase of 2,180 in the number of students. At the annual examination in April 1883, 22,200 students submitted 226,415 drawings or models. The corresponding numbers in 1882 were 21,291 students, and 211,748 works, showing an increase in 1883 of 909 students and 14,667 works sent up. In this examination 19,092 students, on account of whose instruction payments were made to the committees of the schools, were of the industrial classes. The annual examinations in 2nd grade drawing were attended by 12,732 students of schools of art, of whom 6,072 were successful, and 1,740 obtained prizes, showing increases of 1,016, 571, and 223 respectively.

BRITISH MUSEUM.—The number of visitors to the British Museum in 1883 was 660,557 (exclusive of the readers in the library). The numbers in the last six years have stood as follows; in, 1878, 448,516; in 1879, 606,394; in 1880, 665,688; in 1881 764,405; in 1882, 767,402. The number of visits paid to the reading room for the purpose of study or research in 1883 was 152,983; to the department of maps, for the purpose of special research, 30; to the department of manuscripts, for the purpose of examining select manuscripts, 2,206; to the galleries of sculpture, for the purpose of study, 14,771; to the coin and medal room, for the purpose of study, &c., 1,989; to the gold ornament and gem room, 22,195; to the print room, for the purpose of study, 5,105; giving a total of 859,836 visits to the special departments.

NATURAL HISTORY MUSEUM.—The number of visitors to the Natural History Department of the British Museum in 1883 was 277,331 as compared with 278,027 in 1882; and 231,284 in 1881. The number of visitors to the special departments for purposes of study during the year was as follows: zoology, 5,229 (considerably below the average owing to the closing of the department during the removal to South Kensington); geology, 2,453; mineralogy, 617; botany, 1,023; total, 9,322.

NATIONAL GALLERY.—The number of visitors to the National Gallery on the 207 public days in 1883 was 849,604, giving an average on each of these days of 4,104. On students' days (Thursdays and Fridays), when the number of visitors entering by payment is registered by a turnstile, 36,572 persons were admitted between the 1st of January and the 31st of December, 1883; the admission fees (at 6*d.* each) amounting to 914*l.* 6*s.*, as compared with 856*l.* 10*s.* received in 1882. The number of attendances of students during the year, was 21,192; the number of new students entered in the books was 329. The daily average attendance of students stood as follows: in oil colours, 163; in water colours, 44; total, 207. The number of pictures copied in oil during the year was as follows:—Foreign Schools—number of copies, 465; number of pictures copied, 135; number of masters, 70. British School—number of copies, 313; number of pictures copied, 104; number of masters, 43.

NATIONAL PORTRAIT GALLERY.—The number of visitors to the National Portrait Gallery in 1883 was 146,187 as against 84,599 in the previous year, The total number of visitors during 1883 was 61,588 in excess of the number of the year before. The number of visitors on Bank Holiday, 6th August, 1883, was 5,506, as against 2,520 of the previous August. The unprecedented increase of visitors was mainly owing to the opening of the International Fisheries Exhibition in the immediate neighbourhood.

7. EMIGRATION.

DESTINATION OF EMIGRANTS. — The following table shows the numbers, nationalities, and destinations of passengers leaving the United Kingdom for places out of Europe, in 1883, in vessels under the Passengers Acts; including also passengers for places out of Europe in vessels not under the Acts, as far as the same have been recorded, and the total for 1882 :—

Nationality.	To United States.	To British North America.	To Australasia.	To Cape of Good Hope and Natal.	To all other Places.	Total, 1883.	Total, 1882.
English	93,392	27,995	50,201	5,356	6,292	183,236	162,992
Scotch	15,332	3,871	10,975	278	683	31,139	32,242
Irish	82,849	12,319	10,088	108	379	105,743	84,132
Total	191,573	44,185	71,264	5,742	7,354	320,118	279,366
Foreigners ..	60,068	9,381	1,753	960	1,098	73,260	130,029
Not distinguished.	585	—	—	11	3,183	3,779	3 893
General Total.	252,226	53,566	73,017	6,713	11,635	397,157	413,288

IMMIGRANTS.—The following table shows the number of persons who arrived in this country in 1883 from places out Europe, so far as recorded, showing their nationality and the countries whence they came, and the totals for 1882 :—

Nationality.	United States.	British North America.	Australasia.	C. of Good Hope and Natal.	All other places.	Total for 1883.	Total for 1882.
British and Irish .	46,703	7,021	6,844	5,913	7,323	73,804	54,711
Foreigners ..	23,857	259	311	820	1,452	26,699	22,582
Not distinguished	—	—	—	—	—	—	5,511
Total.. ..	70,560	7,280	7,155	6,733	8,775	100,503	82,804

SEX AND CONJUGAL STATE OF BRITISH EMIGRANTS.—The following is an account in detail of the number of emigrants of British nationality, leaving the United Kingdom in 1883 of each sex, and the conjugal conditions of the adults :—

Adults :		
Married	Males	32,874
	Females	39,580
Single	Males	118,103
	Females	64,128
Conjugal condition not stated . .	Males	17
	Females	—
Total		254,702
Children from 1 to 12 years and Infants .	Males	33,851
	Females	31,565
Total		65,416
General Total		320,118

SEX AND CONJUGAL STATE OF FOREIGN EMIGRANTS.—The following is a similar statement of the emigrants of foreign origin :—

Adults :		
Married	Males	39,999
	Females	48 395
Single	Males	151 044
	Females	75,432
Conjugal condition not stated . .	Males	1,057
	Females	174
Total		316,101
Children from 1 to 12 years and infants .	Males	42,338
	Females	38,718
Total		81,056
General Total		397,157

OCCUPATION OF EMIGRANTS.—The following is a statement of occupations of adult passengers of each sex leaving the United Kingdom in 1883, so far as can be ascertained:—

Occupation.	Total.
Adult Males:	
Agricultural Labourers, Gardeners, Carters, &c.	8,551
Bakers, Confectioners, &c.	419
Blacksmiths and Farriers	442
Boot and Shoe Makers	446
Braziers, Tinsmiths, Whitesmiths, &c.	219
Brick and Tile Makers, Potters, &c.	137
Bricklayers, Masons, Plasterers, Slaters, &c.	2,430
Builders	93
Butchers, Poulterers, &c.	376
Cabinetmakers and Upholsterers	229
Carpenters and Joiners	3,541
Clerks and Agents	2,554
Clock and Watch Makers	97
Coachmakers and Trimmers	71
Coopers	156
Domestic Servants	307
Engine Drivers, Stokers, &c.	301
Engineers	840
Farmers and Graziers	8,678
Gentlemen, Professional Men, Merchants, &c.	14,452
Labourers, General	101,032
Locksmiths, Gunsmiths, &c.	18
Mechanics	6,150
Millers, Maltsters, &c.	85
Millwrights	25
Miners and Quarrymen	5,162
Painters, Paperhangers, Plumbers, and Glaziers	1,396
Printers	224
Saddlers and Harness Makers	101
Sawyers	88
Seamen	221
Shipwrights	34
Shopkeepers, Shopmen, Warehousemen, &c.	1,408
Smiths, General	359
Spinners and Weavers	427
Tailors	562
Tanners and Curriers	68
Turners	78
Wheelwrights	166
Army and Navy:—Officers	463
" " Men	74
Other Trades and Professions	3,749
Males:—Occupation not stated	25,931
Adult Females:	
Domestic and Farm-Servants, Nurses, &c.	33,479
Gentlewomen and Governesses	109
Milliners, Dressmakers, Needlewomen, &c.	912
Shopwomen	25
Other Trades and Professions	727
Females:—Occupation not stated	88,749
Total	316,101

DESTINATION OF BRITISH EMIGRANTS.—Of the 320,118 emigrants of British origin who left the United Kingdom in 1883, the destination of the larger numbers was returned as follows: to the British North American Colonies 44,185; to the United States, 191,573; to Australia and New Zealand, 71,264; and to other places, 13,096.

EMIGRATION AND IMMIGRATION.—The following table shows the balance of emigration, deducting recorded immigration from total recorded emigration from the United Kingdom from 1871 to 1883:—

Year.	Emigration.	Immigration.	Net emigration.
1871..	252,435	53,827	198,608
1872..	295,213	70,181	225,032
1873..	310,612	86,416	224,196
1874..	241,014	118,129	122,885
1875..	173,809	94,228	79,581
1876..	138,222	93,557	44,665
1877..	119,971	81,848	38,123
1878..	147,663	77,951	69,712
1879..	217,163	53,973	163,190
1880..	332,294	68,316	263,978
1881..	392,514	77,105	315,409
1882..	413,288	82,804	330,484
1883..	397,157	100,503	296,654

THE EMIGRATION OF 1883.—Two Parliamentary papers have been issued dealing with the emigration of the year 1883, the first covering the United Kingdom, and the second Ireland only. From the first it appears that while the total number of emigrants in 1883 decreased 16,131 (from 413,288 to 397,157), as compared with the previous year, the emigrants of British and Irish origin only increased 40,752 (from 279,366 to 320,118). The total number of immigrants was 100,503 in 1883, as compared with 82,804 in 1882, an increase of 17,699; those of British and Irish origin only being 73,804, as against 54,711, an increase of 19,093. The substantial increase in the number of emigrants last year of British origin only was mainly accounted for by the added number proceeding to Australasia In 1880 this was 24,184; in 1881, 22,682; in 1882, 37,289; and in 1883, 71,264; the last being by far the largest total since 1854, when it was 77,526. The numbers to British North America and the United States were also the largest for 30 years.

NATIONALITY OF EMIGRANTS.—Of the total of 397,157 emigrants who left the United Kingdom in 1883 for countries out of Europe, 183,236 were English, 3,139 Scotch, and 105,743 Irish, giving a total of 320,118 of British origin; the remainder, consisting of 73,260 foreigners, and 3,779 whose nationality was not distinguished.

8. THE POST OFFICE.

REVENUE AND EXPENDITURE.—The gross revenue for the year ended 31st March, 1884, was 9,896,053*l.*, and its increase or decrease on the previous year is shown in the right hand column:—

	£	£	Increase (+) or decrease (−) on 1882–3. £
The gross Revenue for the year ended March 31, 1884, was:—			
Postages on letters, parcels, post cards, newspapers, &c.	..	7,485,206	+450,224
Commission on money orders	209,704		13,671
Commission on postal orders	65,945		
Value of unclaimed money orders	4,000		
		279,649	
Savings bank profits	..	341,974	− 2,818
Revenue from telegraphs*	..	1,789,224	+ 21,164
		9,896,053	
The expenditure, including expenses incurred by other Departments, was:—			
For postal service, including money order and postal order business	4,500,193	..	+588,674
,, packet service	654,636	..	− 20,757
,, savings bank	248,180	..	+ 26,527
,, telegraph service†	1,805,944	..	+220,931
[This includes an exceptional expenditure of 180,000*l.* towards preparation for a reduced tariff.]			
		7,208,953	
The net revenue was, therefore		2,687,100	−374,648

In a note on the balance sheet, the Postmaster-General says:

"When account is taken of the special circumstances of the past year, I think the diminution of 374,648*l.* in the net revenue, cannot be regarded as indicating the probability of any permanent decrease in the profit yielded by the Post Office. In consequence of the Post Office having no capital account, all the charges incident to bringing a new service into operation are defrayed out of income. Thus in the past year it is estimated that nearly 170,000*l.* was expended in supplying plant, &c., for the Parcel Post, and, as previously stated, 180,000*l.* was expended in the preparations for a reduced tariff for inland telegrams. If these two exceptional items are deducted from the expenditure for the past year it appears that there was no real diminution in the net revenue of the Post Office.

THE WORK OF 1883–4.—The estimated number of letters delivered in the United Kingdom during the twelve months ended 31st March, 1884, was 1,322,086,900; of post cards, 153,586,100; of book packets, 294,594,500; of newspapers, 142,702,300; giving a total of 1,912,969,800 deliveries. The number of letters registered was 11,545,072.

POST OFFICES AND LETTER BOXES.—The number of Post Offices has been increased by 545, making a total of 15,951 in the United Kingdom, of which 921 are Head Offices. 1,055 letter boxes have been added, making the total number of receptacles of all sorts for letters about 31,700.

Taking the four decennial periods above referred to, it appears that the total number of Post Offices and other receptacles for letters was 9,973 in 1854; 15,630 in 1864; 22,000 in 1874: and 31,700 in 1884.

* Telegraph revenue £1,760,899
Value of Old Stores, &c., sold by other Departments ... 28,325
1,789,224

† The annual interest on the capital sum of 10,880,571*l.* raised by the Government for the purchase of the telegraphs, amounting to 326,417*l.*, is not borne on the Post Office votes.

STAFF.—The total number of Officers on the permanent establishment of the Department is about 46,000; the number added during the year having been 1,555. The number of females included in this total is 2,731, employed as follows:—As Clerks in the Central Establishments in London, Dublin, and Edinburgh, 587; as Telegraphists, Counter-women, Sorters, &c., throughout the kingdom, 2,145.

RETURNED LETTERS.—The number of letters received in the Returned Letter Office was 5,732,310, an increase of 80,867; of post cards, 635,290, an increase of 38,676; of book packets 4,973,822, a decrease of 15,168; of newspapers 496,695, an increase of 18,717. Of the letters 561,736 were unreturnable. Out of 25,628 letters which bore no address 1,536 contained money and cheques, amounting to 5,158*l*.

PARCEL POST.—The Inland Parcel Post came into operation on the 1st August, 1883, and from that date to 31st March, 1884 (8 months). the number of parcels delivered was, in England and Wales, 11,428,290 (7,431,861 in the provinces and 3,996,429 in London); in Scotland, 1,533,385; and in Ireland 757,237; giving a total of 13,718,912. In the first weeks after the post was introduced the number carried was at the rate of 15 millions a year, gradually the number increased to the rate of between 21 and 22 millions a year, and this represents the number which is being carried at the present time. In reporting on the results of this new branch of work, the Postmaster-General says that, without venturing to predict what will be the amount of business which will ultimately be done under the Parcel Post, he is confident that whether the business is large or small the working expenses can be adjusted to the number of parcels carried, and thus the Revenue secured against loss.

SAVINGS BANKS.—The amount due to depositors at the close of the year, including interest (but exclusive of Government Stock), was 41,768,808*l*., as compared with 39,037,821 on the 31st of December, 1882, being an increase of 2,730,987*l*. The deposits (excluding those relating to Government Stock) were 6,245,940 in number and 12,894,425*l*. in amount, as compared with 6,110,208, amounting to 12,227,528*l*. in 1882, and the withdrawals (exclusive of those relating to Stock) were 205,689 in number and 10,931,205*l*. in amount, as compared with 1,918,544 amounting to 10,094,974*l*. in 1882. The amount of interest credited to depositors was 955,991*l*., an increase of 64,362*l*. During the year 323 new Savings Banks Offices were opened in England and Wales, 33 in Scotland, and 14 in Ireland, making the total number 7,369 on the 31st of December. The number on the 31st of March had been further increased to 7,475. The average amount of each deposit (not including Government Stock business) was 2*l*. 1*s*. 3*d*. as compared with 2*l*. in 1882, and the average amount of each withdrawal 5*l*. 6*s*. 3*d*. against 5*l*. 5*s*. 3*d*. in 1882. The number of accounts opened during the year was 772,201 as against 788,058 in 1882. The number of accounts remaining open at the close of 1882 was 3,105,642, as compared with 2,858,976, an increase of 246,666.

TEN YEARS' SAVINGS BANK WORK.—Since 1874, the aggregate amount of deposits has nearly doubled, having increased from 24,016,836*l*. to 41,768,808, and the number of depositors has also nearly doubled, having increased from 1,668,733 to 3,105,642. It is to be noted that this increase has taken place during a period of considerable depression in many branches of industry, and that it has not been accompanied by any falling off in the business of the Trustee Savings Banks.

MONEY ORDERS.—The Inland Orders issued in 1883 were over 13,700,000 in number, and 25,000,000*l*. in amount, being a decrease, as compared with the previous year, of 515,565 in number and 211,646*l*. in amount. This decrease is attributed in great measure to the extended use of Postal Orders for the transmission of small sums. There was a considerable increase, both in number and amount, in regard to the Foreign and the Colonial Money Orders. The total number of orders issued of every description was 14,028,302 and the amount 25,646,009*l*., as compared with 14,505,254 and 25,754,355*l*. in 1882-3. The Postal Orders issued in the year ended 31st March, 1884, numbered 12,286,556 for sums ranging from 1*s*. to 20*s*., the aggregate amount being 5,028.663*l*. 9*s*., an increase of 1,577,379*l*. 8*s*. 6*d*. on the previous year. The number of Postal Orders now issued is at the rate of more than 18½ millions a year, representing about 7,900,000*l*.

INVESTMENTS IN GOVERNMENT STOCK.—The total amount of Government Stock standing to the credit of depositors at the close of the year was 1,519,983*l*., held by 20,767 persons, against 1,143,717*l*. held by 16,609 persons in 1882, an increase of 376,266*l*. in the amount, and of 4,158 in the number of stockholders. The number of investments during the year was 12,822, and the amount of stock purchased 618,338*l*. as compared with 12,153 investments amounting to 588,211*l*. in 1882. The sales numbered 5,685, and the amount of stock sold was 236,706*l*., as against 4,355 amounting to 177,122*l*. in 1882, and the number of stock certificates obtained was 58, representing 5,550*l*. against 77 certificates representing 6,150*l*. in the previous year. The amount of business has no doubt been considerably affected by the continued high price of Government Stock. The average

amount of stock held by each person at the end of the year was 73*l.* 3*s.* 10*d.* against an average of 68*l.* 17*s.* 3*d.* in 1882.

POSTAL TELEGRAMS. — The number of Telegraph Messages despatched in the year was 32,843,120, an increase of 640,055 over the previous year. The increase in that year over 1881–82 was 746,165. The number of messages despatched in London was 12,639,192, as compared with 12,374,707 in 1882–83, and of this number 1,772,125 were for delivery in London. The number of post offices at which telegraph work is transacted was increased during the year by 123, and the Railway Station Offices by nine, making the total number of telegraph offices 5,873. In the year 1870, when the business of the Telegraph Companies was purchased by Government, the number of telegraph offices was about 3,700, and the number of messages despatched was 8,606,000.

POST CARDS.—The following table shows the estimated number of post cards delivered tn England and Wales and in the United Kingdom in each year from 1873 to the present time, and the increase per cent. per annum :—

Year.	England and Wales.	United Kingdom.	
	Number.	Number.	Increase per cent. per annum.
1873	60,000,000	72,000,000	—
1874	66,000,000	79,000,000	9·7
1875	73,369,100	87,116,300	10·7
1876	78,412,100	92,935,700	6·7
1877–8	86,051,500	102,237,300	10·
1878–9	94,471,500	111,445,700	9·
1879–80	96,637,400	114,458,400	2·7
1880–81	103,473,100	122,884,000	7·4
1881–82	114,251,500	135,329,000	10·1
1882–83	121,243,300	144,016,000	6·4
1883–84	128,554,800	153,586,100	6·6

CHRISTMAS WORK.—There was a large increase in the number of extra letters and packets dealt with in the Central Office during Christmas week, 1883, the number being reckoned at 15,400,000 (including 208,400 registered letters), as compared with 14,000,000 the previous year. Besides these, about 4,000,000 extra letters were dealt with in the District Offices without passing through the Central Office. The weight of the extra registered letters was 2 tons 18 cwt., or 2 cwt. less than in previous years, owing no doubt to the heavier packets having been transmitted by the Parcel Post. The ordinary number of letters, &c., passing through the Central Office in a week is estimated at 13,500,000, and thus it appears that the correspondence during the Christmas week was increased by more than 100 per cent. To meet the pressure caused by this large addition, upwards of 1,200 persons were temporarily employed, making the total number on duty in the Central Sorting Office over 3,000, and special mail trains were despatched from London to the provinces in advance of the usual night mails.

BOOK PACKETS AND CIRCULARS.—The following table shows the estimated number of book packets and circulars delivered in the United Kingdom in each year from 1873 to the present time, and the increase per cent. per annum :—

Year.	England and Wales.	United Kingdom.	
	Number.	Number.	Increase per cent. per annum.
1873	104,000,000	129,000,000	13·1
1874	115,769,600	141,967,100	10·0
1875	133,394,900	158,666,600	11·7
1876	146,405,300	173,724,900	9·4
1877–78	157,691,600	189,300,600	8·9
1878–79	164,789,400	197,076,500	4·1
1879–80	180,541,400	213,963,000	8·6
1880–81	204,003,400	240,356,200	12·3
1881–82	228,999,400	271,038,700	12·8
1882–83	244,713,800	288,206,400	6·3
1883–84	249,347,900	294,594,500	2·2

NEWSPAPERS.—The following table shows the estimated number of newspapers delivered in England and Wales and the United Kingdom in each year from 1873 to the present time, and the increase per cent. per annum :—

Year.	England and Wales.	United Kingdom.	
	Number.	Number.	Increase per cent. per annum.
1873	89,115,200	113,016,500	3·6
1874	91,230,400	117,032,900	3·5
1875	93,345,600	121,049,400	3·4
1876	95,460,800	125,065,900	3·3
1877–8	98,232,400	128,558,000	2·7
1878–9	100,424,300	130,895,300	1·8
1879–80	100,317,000	130,518,400	—
1880–81	102,764,600	133,796,100	2·5
1881–82	108,651,700	140,789,100	5·2
1882–83	108,613,500	140,602,600	—
1883–84	109,945,100	142,702,300	1·5

9. MISCELLANEOUS.

CIVIL LIST PENSIONS.—The following is a list of all Pensions granted during the year ended 20th June, 1884, and charged upon the Civil List:—Mr. Edward Edwards, in recognition of his valuable services to the cause of literature, 80*l.*; Mr. Matthew Arnold, in recognition of his distinguished literary attainments and his eminence as a poet, 250*l.*; the Rev. Charles C. Southey, in consideration of the great literary merit of his father, Mr. Robert Southey, 100*l.*: Mrs. Marie Antoinette Moncrieff, in consideration of the narrow circumstances in which she has been left on the death of her husband, Commander L. N. Moncrieff, R.N., who was killed in the discharge of his duties as Her Majesty's Consul at Suakim, 100*l.*; Mr. Fred James Furnivall, in recognition of his services to English philology and literature, 150*l.*; Sir Richard Owen, K.C.B., in addition to the pension of 200*l.* a year granted to him in 1842, in recognition of his eminent services to science, 100*l.*; Mr. James Augustus Henry Murray, LL.D., in consideration, and for the promotion, of his valuable services to philology, especially in connection with his work as editor of the New English Dictionary, 250*l.*; Mr. William Neilson Hancock, Q.C., LL.D., in recognition of his valuable services as a statistician, 170*l.* Total, 1,200*l.*

RAILWAY PROGRESS IN ENGLAND AND WALES.—The following table shows the total length, capital, passengers conveyed, receipts, and working expenses of railways in England and Wales from 1870 to 1883:—

Years.	Length of lines open at the end of each year.	Total capital paid up (shares, loans, &c.) at the end of each year.	Total No. of passengers conveyed (excluding season-ticket holders).	Gross receipts.	Total of working expenses.	Net traffic receipts of passengers and goods.
	England and Wales.					
	Miles.	£	No.	£	£	£
1870 ..	11,043	440,169,455	295,173,920	38,122,161	18,227,739	19,894,422
1871 ..	10,850	461,368,616	328,552,946	41,383,065	19,387,483	21,995,582
1872 ..	11,136	473,639,591	372,450,223	45,039,155	22,065,151	22,989,668
1873 ..	11,369	490.018,994	401,465,086	48,857,278	25,813,377	23,043,901
1874 ..	11,622	508,726,428	423,083,941	50,210,136	27,534,723	22,675,413
1875 ..	11,789	527,090,667	451,032,641	51,726,416	28,220,495	23,505,921
1876 ..	11,989	544,831,959	477,146,165	52,476,319	28,466,366	24,009,953
1877 ..	12,098	557,878,925	490,351,707	53,057,499	28,635,033	24,422,466
1878 ..	12,229	579,387,630	503,982,893	53,142,875	28,099,438	25,043,437
1879 ..	12,547	593,155,665	503,652,787	52,479,379	27,112,853	25,366,526
1880 ..	12,656	602,242,578	540,669,175	55,795,186	28,577,111	27,218,075
1881 ..	12,807	616,437,449	561,224,291	57,240,132	29,685,896	27,554,236
1882 ..	13,052	635,186,791	586,689,830	59,092,802	30,927,457	28,165,345
1883 ..	13,202	650,945,834	612,401,758	60,521,638	31,819,248	28,702,390

CHRONICLE OF EVENTS AND OCCURRENCES.

Home and Foreign.

From November, 1883, *to November*, 1884.

1883.

Nov. 19. The piercing of the Arlberg tunnel in Austria completed.
26. Warden, late Manager of the London and River Plate Bank, sentenced to twelve years' penal servitude, for stealing securities from the Bank.
27. J. D. Walters, stockbroker, sentenced to twelve years' penal servitude, for receiving securities of the River Plate Bank from Warden.
30. The House of Lords gave judgment in the Dobbs case against the claim of the Grand Junction Waterworks to charge on gross value of premises.

Dec. 4. International Exhibition at Calcutta opened by the Viceroy.
6. The Chamber of Deputies at Brussels burnt.
-. The Judges of the High Court resolved, by 18 to 10, to add thirteen days to the sittings of the Courts in London.
10. Announcement of elevation of Mr. Tennyson, Poet Laureate, to the Peerage.
—. The French Chamber, by 381 to 146, voted supplies for the expedition to Tonkin, and by 315 to 206 voted confidence in the Ministry.
11. Testimonial of 37,000*l.* presented to Mr. Parnell, M.P., by his countrymen.
13. The Convocation of Oxford University refused, by 556 to 155, to accept the nomination of Mr. R. F. Horton, a Congregational minister, as an Examiner in Theology.
17. The French captured Sontay.
—. Patrick O'Donnell executed at Newgate for the murder of James Carey, the informer.
29 Assassination of Lieut.-Col. Sudeikin, Chief of the Secret Police in St. Petersburg.

1884.

Jan. 1. Consecration of the Rev. Alfred Barry, D.D., as Bishop of Sydney.
9. Mr. Henry George, from the United States, author of "Progress and Poverty," commenced his lecturing tour in the United Kingdom by an address at St. James's Hall.
18. General Gordon, C.B., left England for Egypt.
22. Severe gales throughout England.
25. The Khédive of Egypt appointed General Gordon Governor-General of the Soudan.
28. Great hurricane in London and throughout the country.

Feb. 4. Baker Pasha's army totally defeated near Trinkitat by the Mahdi's Arab troops.
-. 5th Session of the 10th Parliament of Queen Victoria opened by Commission.
5. The Marquis of Ripon as Viceroy installed the Nizam of Hyderabad, on his attaining his majority.
7. Bank rate raised from 3 to 3½ per cent.
-. London School Board rate announced to be 8½*d.* in the pound.
-. The Manager and four members of the Park Club, Park Lane, fined 500*l.* each, and three members 100*l.* each, for gambling in the Club.
8. Sinkat entered and garrisons destroyed by the Mahdi's followers.

Feb. 9. Lord Coleridge, in the Queen's Bench Division, gave judgment in the case of Bradlaugh *v.* Gosset, and ruled that there was no precedent for allowing proceedings in courts of law against the Sergeant-at-Arms on matters connected with the House of Commons.

11. Fatal accident to a wedding party; while crossing the Theiss the ice gave way, and only one of the thirty-five escaped.

—. Mr. Bradlaugh went through the form of administering the oath to himself in the House of Commons; motion to exclude him from the precincts of the House until he engaged not to disturb the proceedings carried by 228 to 120.

12. New writ issued for Northampton, Mr. Bradlaugh having accepted the Chiltern Hundreds.

—. House of Lords passed a vote of censure on the Government for its action in Egypt, by 181 to 81.

18. General Gordon arrived in Khartoum.

20. Sir Stafford Northcote's motion censuring the Government for its policy in Egypt rejected in the Commons by 311 to 262.

22. Lord Salisbury's motion for appointment of a Royal Commission on the Housing of the Working Classes adopted in the House of Lords.

—. Sir Henry Brand tendered his resignation as Speaker of the House of Commons.

27. Dynamite explosion at Victoria Station, London.

—. Mr. Arthur Wellesley Peel took the Chair as Speaker of the House of Commons, in succession to Sir H. R. Brand.

—. Convention with the Transvaal Delegates signed in London.

28. Discovery of dynamite and explosive machines at Charing Cross and Paddington Stations.

29. Battle of El Teb: Osman Digna and his followers defeated by General Graham.

Mar. 1. Dynamite discovered at Ludgate Hill Station.

12. Bacninh captured by the French.

13. Bank rate lowered from 3½ to 3 per cent.

—. Battle of Tamai: Osman Digma vanquished by the British forces under General Graham.

15. Mr. E. P. Weston, a total abstainer from alcoholic liquors, completed his walk of 5,000 miles in 100 days.

16. Sunday Session in the House of Commons, which adjourned at 5.45 A.M., after sitting from noon on Saturday.

17. Court of Appeal gave judgment in the Belt case, restoring the verdict of 5,000*l.* damages returned by the jury, the defendant Lawes being ordered to pay costs.

21. Lord Thurlow's motion for the Sunday Opening of Museums rejected in the Lords, by 46 to 38.

—. Mr. Willis's motion to exclude Bishops from the House of Lords rejected in the Commons, by 148 to 137.

27. General Graham telegraphed from the Soudan "the campaign is now over."

28. Sudden death of the Duke of Albany at Cannes.

29. Mr. Pell's motion on local taxation carried by 208 to 197, the Government voting with the minority.

April 1. Removal of the Duke of Albany's body from Cannes, the Prince of Wales accompanying it.

2. The Judges of the Queen's Bench Division passed a sentence of four months' imprisonment on Mr. Edmund Yates, proprietor of the "World," for a libel on the Countess of Lonsdale.

—. The Sunday Closing Bill "talked out" in the Commons.

3. Bank rate reduced from 3 to 2½ per cent.

April 5. Funeral of the Duke of Albany at St. George's Chapel, Windsor.
7. University boat race won by Cambridge by two and a-half boats' lengths.
-. Second reading of the Franchise Bill carried in the Commons, by 340 to 216.
8. Ministerial Bill for the Government of London introduced in Commons.
14. Reviews of Volunteers at Portsmouth, Dover, and Aldershot.
15. Celebration of Tercentenary of Edinburgh University.
—. Queen Victoria left England for Darmstadt.
17. Letter from the Queen to the nation, dated 14th instant, expressing Her Majesty's deep sense of the sympathy shown to Her Majesty and to the Duchess of Albany in their bereavement.
18. Collision between the barque "Pomona" and "State of Florida," 138 lives lost.
22. Shock of earthquake in England; great damage to buildings in Eastern Counties.
—. The new Gray's Inn Road, London, taking the place of old Gray's Inn Lane, opened by the Chairman of the Metropolitan Board of Works.
24. Budget introduced by Mr. Childers providing for a reduction in the carriage tax, but making no reduction in the income tax.
29. Statute admitting women to certain examinations in Oxford University carried in Convocation, by 464 to 321.
30. Marriage of Prince Louis of Battenberg with Princess Victoria of Hesse at Darmstadt, Queen Victoria being present.
—. Dr. Cameron's Bill to legalise Cremation rejected in the Commons, by 149 to 79.

May 1. Dr. George Ridding, late Head Master of Winchester, consecrated first Bishop of Southwell, at St. Paul's Cathedral.
-. Earl of Derby made a Knight of the Garter.
8. Opening of the Health Exhibition at South Kensington by the Duke of Cambridge.
9. Bill for Suppressing Pigeon Shooting rejected in the Lords, by 48 to 30.
10. Prolongation of the Socialist Law voted in the German Reichstag, by 189 to 157.
13. Vote of Censure on the Government for their Egyptian policy rejected in the Commons, by 305 to 278.
16. Stadt Theatre at Vienna burnt to the ground.
18. Majority of the Czarewitch: festivities throughout Russia.
20. Mr. Brodrick's amendment on the Franchise Bill, excluding Ireland from its operation, rejected, by 334 to 139.
21. Dinizulu, son of Cetewayo, crowned King of Zululand.
29. The Highgate Hill Steep Gradient Tramway, the first of its kind in this country, opened.
30. Dynamite explosions in St. James's Square and Scotland Yard.

June 9. The Emperor of Germany laid the stone of the new House for the Imperial Parliament at Berlin.
15. Riotous proceedings of the Royal Staffordshire Yeomanry at Lichfield: sudden death of Colonel Bromley Davenport, M.P., in the street.
—. Marriage of Princess Elizabeth of Hesse to the Grand Duke Sergius, at St. Petersburgh.
16. Mr. Mundella introduced the Education Estimates, the vote amounting to 3,016,167*l.*

June 19. Outbreak of cholera at Toulon.
—. Bank rate reduced from 2½ to 2 per cent.
20. Freedom of the City of London presented to Lord Shaftesbury.
—. Irish Sunday Closing Bill extending the measure to the whole of Ireland talked out in the Commons.
24. Judgment of lower Court fining members of committee of Park Club for gambling affirmed, but judgment against players of the game quashed by Justices Hawkins and Smith.
—. Statement by Mr. Gladstone in Parliament as to agreement with France on the basis of the Conference on Egyptian affairs.
25. Central Institution for the Advancement of Technical Education opened by the Prince of Wales, at South Kensington.
26. Franchise Bill read a third time, *nem. con.*, in the House of Commons.
30. The Lord Chief Justice summed up in the case of the Attorney-General *v.* Bradlaugh, the verdict of the jury being that Mr. Bradlaugh had not taken the oath in proper Parliamentary form, and that when he pretended to take it he had no belief in a Supreme Being.

July 1. Opening of the International Forestry Exhibition at Edinburgh.
8. House of Lords, by 205 to 146, refused to proceed with the Franchise Bill unless accompanied by a Redistribution Bill.
9. Celebration of the completion of the Revision of the Old Testament.
11. Governor Cleveland nominated for the Presidency of the United States by the Chicago Democratic Convention.
10. The Deceased Wife's Sister Marriage Bill withdrawn from the House of Lords by Lord Houghton.
16. Fatal railway accident at Penistone, York, by breaking of an engine axle.
17. Motion of Lord Wemyss to proceed with the Franchise Bill, on condition that Parliament should be summoned in the autumn to deal with Redistribution, rejected by the Peers, by 182 to 132.
21. Demonstration and procession in London in support of the Franchise Bill.
22. Queen's Prize in the Volunteer competition at Wimbledon won by Private Gallant, 8th Middlesex Corps.
23. International Cricket Match between England and Australia won by England.
—. Opening of the new building for St. Paul's School, at Hammersmith.

Aug. 1. Celebration of the Jubilee of the Abolition of Slavery by a Mansion House meeting, at which the Prince of Wales spoke.
2. Conference of Representatives of Great Powers on Egypt adjourned *sine die* in London, having arrived at no conclusion.
4. National Assembly for the Revision of the Constitution met at Versailles.
—. Letter received from General Gordon, dated June 11, stating that he was still besieged at Khartoum.
9. Bill to enable the Bishopric of Bristol to be re-established as a See separate from Gloucester passed in the Commons.
13. The Revision Bill adopted by the French Senate, a proposal to elect the Members of the Senate by Universal Suffrage having been rejected.

Aug. 14. Parliament prorogued by Commission.
20. Prince and Princess of Wales visited Newcastle and opened Armstrong Park.
21. French Ambassador left Pekin, thus marking the cessation of friendly relations between France and China.
23. The Arsenal of Foochow bombarded and destroyed by the French.
27. Meeting of the British Association opened at Montreal.
31. Lord Northbrook and Lord Wolseley left London for Egypt, the former on a special mission, the latter to take command of the British forces.

Sept. 7. The King of Italy visited the Cholera Hospitals in Naples.
15. The Emperors of Germany, Russia, and Austria met at Skernievice.
17. Social Science Association opened its annual meeting at Birmingham, with Mr. G. J. Shaw-Lefevre, M.P., as President.
22. H.M. gunboat "Wasp" wrecked on north-east coast of Ireland, fifty-two killed.
28. Statue of John Sebastian Bach unveiled at Eisenach, in the presence of a great gathering of musicians of all nations.
29. Alderman G. S. Nottage elected Lord Mayor of London.
30. Twenty-fourth Annual Church Congress opened at Carlisle.

Oct. 4. Total eclipse of moon, visible in England.
6. Completion of the Inner Circle on the Metropolitan Underground Railway; line opened for traffic.
7. Celebration at Aberdeen of the centenary of Bishop Seabury's consecration as the first bishop for the United States of America.
9. Bank rate raised from 2 to 3 per cent.
-. Redistribution Scheme, described as a Cabinet draft, published in the "Standard."
-. Pusey Memorial House and Library opened at Oxford.
20. "The Claimant" in the Tichborne case released from prison on a "ticket of leave."
23. Opening of the special Autumn Session of Parliament.
24. Sir Moses Montefiore completed his 100th year.
—. Mr. Campbell Bannerman, M.P., Secretary of the Admiralty, sworn in as Chief Secretary for Ireland, *vice* Mr. G. O. Trevelyan, appointed Chancellor of the Duchy of Lancaster.
30. Bank rate raised to 4 per cent.

Nov. 3. Meeting at the Mansion House to establish a British Commercial Geographical Society.
5. Cases of cholera in Paris.
6. Bank rate raised to 5 per cent.
7. Franchise Bill read a second time in the Commons, by 372 to 232.
11. Franchise Bill read a third time in the Commons without a division.
12. Governor Cleveland's election as President of the United States reported as beyond question.
13. Vote of 1,000,000*l.* for further expenses of the Nile Expedition by 73 to 17.

NECROLOGICAL TABLE

OF DISTINGUISHED AND NOTABLE PERSONS WHO DIED BETWEEN NOVEMBER, 1883, AND NOVEMBER, 1884.

1883.		Age
Nov.	12. HEUGEL, J. L., music publisher, for more than 35 years editor of "Le Menestrel"; at Paris	68
	17. OVERSTONE, Lord (Samuel Jones Loyd), banker; at Carlton Gardens	87
	19. SIEMENS, Sir Charles William, LL.D., F.R.S., electrician; at Palace Houses, Kensington	60
	—. FAGGE, C. Hilton, M.D., F.R.C.P., physician; at Grosvenor Street	45
	24. FITZGERALD, Right Rev. William, D.D., Bishop of Kildare; at Killaloe	70
	29. FINNIS, Thomas Quested, senior Alderman of the City of London; at Wanstead Park	82
	30. NEILSSON, Sven, professor of natural history and keeper of the Museum, antiquary and palæontologist; at Lund	96
Dec.	4. CAYLEY, Charles Bagot, B.A., Translator of Dante's "Divina Commedia"; at South Crescent, Bedford Square	60
	10. LENORMANT, François, Orientalist; at Paris	46
	11. MARIO, Guiseppe, operatic artist; at Rome	71
	—. DOYLE, Richard, formerly one of the artists for "Punch"; at Finborough Road, Fulham Road	58
	12. HALL, Sir Charles, ex-Vice-Chancellor; at 8, Bayswater Hill	69
	—. HUXTABLE, Ven. Anthony, formerly Archdeacon of Dorset; at St. Leonards	75
	14. MARTIN, Henri, historian; at Paris	73
	26. HOLLOWAY, Thomas, proprietor of patent medicines; at Sunninghill	83
1884.		
Jan.	5. LASKER, Edward, member of the German Reichstag; at New York	55
	7. HARRIS, John, the Cornish poet, a Civil List pensioner; at Falmouth	62
	—. KESHUB CHUNDER SEN, Head of the Brahmo Somaj; at Calcutta	
	14. HOLL, Francis, A.R.A., engraver; at Godalming	68
	—. HUNT, Thomas Newman, Governor of Bank of England 1867–8, and Director for forty years	78
	22. GROSVENOR, Earl, heir to the Dukedom of Westminster; at Chester	30
	25. HERTFORD, Marquis of, Francis Hugh Seymour, Lord Chamberlain 1874-79; at Ragley Hall, Alcester	72
	30. BOULTBEE, Rev. Thomas Pownall, LL.D., Principal of the London College of Divinity; at Bournemouth	65
	31. PARKER, John Henry, C.B., antiquarian, author, and publisher; at Oxford	77
	—. DE RUMILLY, Gauthier, "Father" of the French Senate; at Paris	91
Feb.	2. HAYWARD, Abraham, Q.C., essayist; at 8, St. James's Street, S.W.	81
	—. PHILLIPS, Wendell, the abolitionist orator; at Boston, U.S.A.	72

		Age
Feb.	3. BYLES, Right Hon. S. W. John Barnard, Judge of Common Pleas 1858–73; at Uxbridge	83
	—. ROUHER, Eugène, Imperialist statesman; at Paris	69
	8. CETEWAYO, ex-King of Zululand; at Echowe.	
	—. SCUDAMORE, Frank Ives, C.B., organizer of Turkish postal system; at Constantinople	61
	11. CHENERY, Thomas, M.A., editor of the "Times" from 1877 to 1884; at Serjeant's Inn	57
	—. BALFOUR, John Hutton, M.D., late Emeritus Professor of Medicine and Botany in Edinburgh University; at Edinburgh	76
	17. CALVERLEY, Charles Stuart, author of translations and original verse	50
	21. HULLAH, John Pike, LL.D.; promoter of popular singing by the old notation, H.M. Inspector of Music in Training Colleges; at Grosvenor Mansions, Victoria Street	71
	25. GIBSON, Right Hon. T. Milner, formerly President of the Board of Trade, one of the chief orators of the League for abolishing the Corn Duties; at Algiers	76
March	1. TODHUNTER, Isaac, D.Sc., F.R.S.; at Cambridge	63
	8. DACRES, Sir Sydney Colpoys, G.C.B., Admiral, Governor of Greenwich Hospital; at Brighton	80
	10. JERROLD, William Blanchard, editor of "Lloyd's Weekly News" for twenty-six years; at Victoria Street	57
	19. BISHOP, Anna, vocalist; at New York	69
	21. THOMSON, Allen, M.D., Professor of Anatomy in University of Glasgow 1848-77; in London	75
	23. BOWLEY, Samuel, President of the National Temperance League; at Gloucester	81
	28. ALBANY, THE DUKE OF, K.G., H.R.H. PRINCE LEOPOLD; at Cannes	30
	30. TRUBNER, Nicholas, publisher; at 22, Upper Hamilton Terrace, N.W.	66
April	1. LITTON, Marie (Mrs. Wybrow Robertson), actress; at 6, Alfred Place, Brompton	
	4. RICHTER, Professor Gustav, portrait painter; at Berlin	60
	6. SQUIRE, Peter, chemist to the Queen; at 12, York Gate, Regent's Park	85
	—. RUSSELL, Rev. John Fuller, B.A., F.S.A., author; at 4, Ormonde Terrace, N.W.	70
	—. GEIBEL, Emanuel, lyric poet; at Lubeck	69
	11. DUMAS, Jean Baptiste, chemist; at Cannes	84
	—. READE, Charles, novelist and dramatic author; at Shepherd's Bush	70
	12. BYRON, Henry James, barrister and dramatic author; at Clapham Park	48
	14. BICKERSTETH, Right Rev. Robert, D.D., Bishop of Ripon at Ripon	67
	16. BUCCLEUCH, Duke of, sometime Lord President of the Council; at Bonhill, Selkirk	78
	24. TAGLIONI, operatic dancer; at Marseilles	79
	29. COSTA, Sir Michael, composer, vocalist, and conductor; at West Brighton	74
	—. BASS, Michael Thomas, brewer, M.P. for Derby, 1848-83; at Rangemore Hall	84
	30. HASLEM, John, miniature painter; at Derby	76
May	4. ANNA, EX-EMPRESS OF AUSTRIA	81

		Age
May	6. BENJAMIN, J. P., Q.C., international lawyer, Attorney-General in Jefferson Davis's Provisional Government, and subsequently joined the English Bar; at Paris.	73
	9. GOODFORD, Rev. Charles Old, D.D., Provost of Eton College; at Eton	71
	11. GARDEN, Rev. Francis, LL.D., Sub-Dean of Her Majesty's Chapel Royal; at Victoria Street	73
	—. WURZ, Charles Adolphe, chemist; at Paris	67
	12. SMITH, Dr. Robert Angus, chemist, Inspector-General of Alkali Works for the United Kingdom; at Glynwood, Colwyn Bay	66
	15. JUNDT, Gustave, artist; at Paris	53
	20. BRASSIN, Louis, Belgian composer and musical professor; at St. Petersburgh	44
	28. D'HAUSSONVILLE, Count, Senator and Member of the French Academy, a prominent Orleanist; at Paris	75
	29. FRERE, Right Hon. Sir Bartle, G.C.B., G.C.S.I., late Governor of the Cape of Good Hope; at Wimbledon	69
June	3. HAMILTON, Lord Claud, M.P. for Tyrone for 37 years; at Portland Place	71
	3. PERIGAL, A., R.S.A., painter; at Edinburgh	68
	6. BRAGGE, William, F.S.A., engineer;	72
	10. ROGERS, E. T. (Rogers Bey). Arabic and Eastern scholar; at Cairo	53
	11. GASKELL, Rev. William, Unitarian Minister and author; at Manchester	79
	21. WILLIAM, PRINCE OF ORANGE; at the Hague	33
	23. BROWN, Rev. James Baldwin, B.A., Congregational Minister and author; at Coombe	64
	—. TISSOT, Charles J., late Ambassador from France to the Court of St. James's; at Paris	56
	29. BIRCH, Rev. H. Mildred, Canon of Ripon, and formerly tutor to the Prince of Wales; at Windsor	60
July	2. TODLEBEN, Count, general and military engineer; at Soden	66
	5. MASSÉ, Victor, composer; at Paris	62
	6. WALKER, G. A., M.D., promoter of the Extra-Mural Interment Act, popularly known as "Graveyard Walker"; at Dolgelly	77
	11. LEPSIUS, Karl Richard, Egyptologist; at Berlin	74
	13. JACOBSON, Right Rev. William, D.D., Bishop of Chester 1865–83; at Chester	81
	—. MOIGNO, Francois Napoléon Marie, Abbé and Canon of St. Denis, editor of "Cosmos" and other scientific works; at Paris	79
	15. COWLEY, Earl, K.G., G.C.B., diplomatist; at Albemarle St.	80
	17. WILLIAMS, Sir Watkin, Judge of the High Court of Justice; at Nottingham	55
	18. HOCHSTETTER, Ferdinand, geologist and geographer; at Vienna	55
	20. HAWKINS, Cæsar, F.R.S., Sergeant-Surgeon to the Queen; at 26, Grosvenor Street	85
	22. PEEL, Right Hon. Sir Laurence, Chief Justice of the Supreme Court of Calcutta 1842–55; at Ventnor	84
	25. AUSTIN, Edward, journalist, proprietor of the "Clifton Chronicle"; at Clifton	65
	31. MANLEY, Charles, F.R.S., for 45 years Secretary and Hon. Sec. of the Institution of Civil Engineers; at Lower Grosvenor Place	79

		Age
July	28. BERG, Nicolai Vassilijevich, Russian journalist and author; at Warsaw	63
	30. PATTISON, Rev. Mark, B.D., Rector of Lincoln College; at Oxford	70
Aug.	5. PARDON, George F., journalist, author of books on games under the names of "Captain Crawley"; at Canterbury	62
	6. CODRINGTON, Sir William J., K.C.B., Commander-in-Chief in the Crimea 1855-56;	80
	8. WILSON, Sir W. J. Erasmus, LL.D., F.R.S., surgeon; presented Cleopatra's Needle to London, and paid cost of its conveyance from Egypt; at Westgate-on-Sea	74
	—. PETIT, Léonce, artist, illustrator of the "Journal Amusant" and "Le Monde Illustré"; at Paris	45
	11. CLAUGHTON, Right Rev. Piers Calverley, D.D., Bishop of St. Helena 1859–62, Colombo 1862-70, Archdeacon of London, and Chaplain-General of the Forces; at Maida Vale	70
	13. WELLINGTON, Duke of, K.G. (Arthur Richard Wellesley), second Duke; suddenly at Brighton Railway Station	78
	—. LAUDERDALE, Right Hon. Charles, Earl of, killed by lightning while riding on his estate; at Midlothian	62
	22. BOHN, Henry George, F.S.A., publisher and author; at Twickenham	88
	25. AMPTHILL, Lord (Right Hon. Odo William Russell), G.C.B., G.C.M.G., British Ambassador to Germany; at Berlin	65
	30. BROWN, John Collis, M.D., inventor of chlorodyne; at St. Lawrence-on-Sea	65
Sept.	2. LIVESEY, Joseph, temperance advocate; at Preston, Lancashire	90
	22. WILLIAMS, Griffith, "the Patriarch of Carnarvonshire"; at Bangor	105
	24. LEIGH, Hon. Gilbert C., M.P. for South Warwickshire; killed by falling over a precipice while pursuing wild sheep; in Wyoming	33
Oct.	3. MAKART, Hans, painter; at Vienna	43
	6. FREAKE, Sir Charles James, Bart, a munificent supporter of the Royal College of Music; at Cromwell House	70
Nov	1. MILES, Joseph Johnson, J.P., publisher, Master of the Stationers' Company, 1882-3; at Highgate	73
	—. ISELIN, John Frederick, M.A., Assistant Director for Science at the Science and Art Department, South Kensington, and a contributor to the "Companion to the British Almanac"; at Streatham	52
	4. BLEWITT, Octavian K. L., F.R.G.S.; for 46 years Secretary of the Royal Literary Fund; at Elgin Crescent	80
	5. LONDONDERRY, Marquis of, K.P., Lord Lieutenant of Durham; at Plas Machynlleth	63
	6. FAWCETT, Right Hon. Henry, M.P., Postmaster-General, Professor of Political Economy in Cambridge University; at Cambridge	50

NOTE.—This table contains the names of 112 persons, of whom 17 were over 80 years of age, and of these three were over 90, one being over 100.

INDEX

TO

THE 'BRITISH ALMANAC' & 'COMPANION TO THE ALMANAC.'

(The figures in parentheses refer to the pages of the 'BRITISH ALMANAC,' *and those not so marked to the separately numbered pages of the* 'COMPANION TO THE ALMANAC.')

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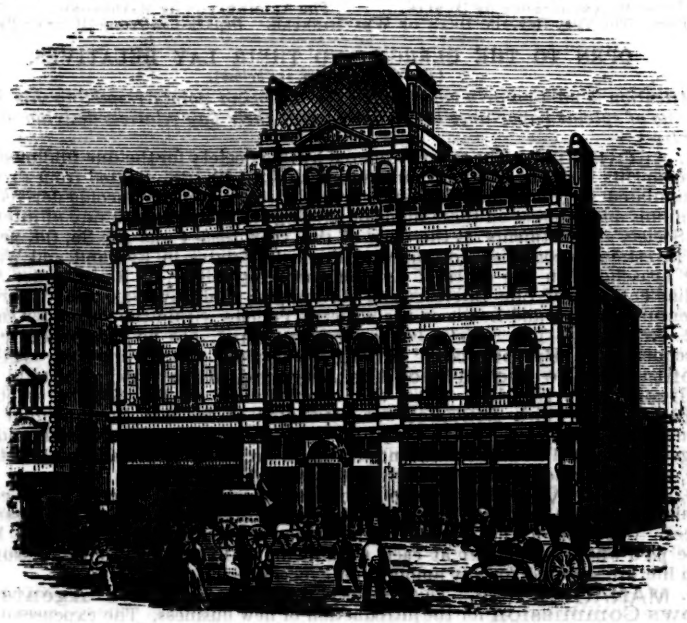

BRANCH OFFICES.

ENGLAND.

BIRMINGHAM, 18, Bennett's Hill.
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DUNDEE, 74, Commercial Street.

IRELAND.

DUBLIN, 5, Westmoreland Street.

FUNDS.

Realised Assets (1883), £3,351,200 Life Assurance and Annuity Funds, £3,265,000
Annual Income ... ... £664,094.

The Directors are prepared to receive from Local Boards and Corporations applications for Loans upon Rates.

The Society also grant Loans upon security of Freehold, Copyhold and Leasehold Property, Life Interests and Reversions.

Prospectus, Reports, and Proposal Forms can be obtained on application to the Society's Agents and Branch Offices, or to—

JOSEPH ALLEN,
Secretary.

Clergy Mutual Assurance Society,

1 & 2, THE SANCTUARY, WESTMINSTER, S.W.

Patrons.

His Grace the ARCHBISHOP OF CANTERBURY. His Grace the ARCHBISHOP OF YORK.

President—The Right Hon. and Right Rev. the LORD BISHOP OF LONDON.

Trustees.

His Grace the ARCHBISHOP OF CANTERBURY. The Rt. Rev. the LORD BISHOP OF WINCHESTER.
His Grace the ARCHBISHOP OF DUBLIN. The ARCHDEACON OF MAIDSTONE.
Chairman—The Very Rev. the DEAN OF WESTMINSTER. *Deputy-Chairman*—ROBERT FEW, Esq.

OPEN TO THE CLERGY AND THEIR LAY RELATIVES.

(*For Qualification, see below*).

Attention is particularly requested to the following points respecting this Society, as being of special importance to Clergymen and their Lay relatives desiring to assure their lives:—

1. **SECURITY.**—The security offered by this Society for the due fulfilment of its engagements consists of Funds, amounting to **£3,148,166**, created from Premiums accumulated at compound interest, together with an Annual Income derived from Premiums and interest on these funds of **£343,271**. The average rate of interest on the Society's Investments at the close of the year 1883-4 was **£4 3s. 0d.** per cent. The investments comprise Mortgages of Freehold Estates in England and Wales, of long Leaseholds in the cities of London and Westminster, of Rates under Acts of Parliament, and of Life Interests and Reversions; Railway, Gas, and Water-works Debenture Stocks; and Loans on the Society's Policies within the surrender values.

2. **BONUS.**—This Society, being purely **mutual**, has no **Proprietors**, and consequently no **Proprietors' Fund** upon which to pay interest. **All the Profits are the property of the Assured Members.** The total Profits **realized** and **divided** since the establishment of the Society amount to **£1,619,812**, of which **£437,347** was distributed at the last Quinquennial Bonus among **7,882** Policies. Of these **1,070** were then, by means of Bonus, not only altogether released from the payment of Annual Premiums, but had, in almost every case, additions made to the sums originally assured.

3. **PREMIUMS.**—The Rates of Premium for which assurances may be effected in this Society are less than those charged by the great majority of Life Assurance Offices. One-fifth of the Annual Premium may remain a charge upon the Policy, to be paid wholly or in part at each Quinquennial Division of Profits. Assurances upon life are granted for any amount not exceeding **£7,500.**

4. **MANAGEMENT.**—This Society **neither employs Agents nor allows Commission** for the introduction of new business. The expenses of management on all accounts were in the past financial year only **£4 5s. 9d** per cent. of the Total Revenue, and **£6 11s.** per cent. of the Premium Revenue. So that for **£6 14s. out of every £100 received for Premiums,—which is not much more than the usual allowance paid by other Offices for Commission alone.—the whole business of this Society is conducted.**

NO LIABILITY INCURRED BY THE ASSURED.

The business of the Society is chiefly with a class of persons in which the average duration of life is allowed to be beyond that ordinarily found in the community at large. The experience of the duration of life among the Members has hitherto been very favourable.

STEWART HELDER, *Actuary.*
MATTHEW HODGSON, *Secretary.*

QUALIFICATION.

The following may make an Assurance upon his or her own Life, and also for his or her own benefit upon the Life of any other person, provided He or She may have an interest in such Life to the amount of the capital sum to be assured:—

1. Any Clergyman of the respective Churches of England and Ireland, or of the Protestant Episcopal Church in Scotland.
2. Any Wife, Widow, Child or Grandchild, or any Father, Mother, Brother, Sister, Uncle, Aunt, Nephew or Niece of any such Clergyman.
3. Any Father Mother, Brother, Sister, Uncle, Aunt, Nephew or Niece of the Wife or Widow of any such Clergyman.
4. The Wife or Widow of any Son, or the Husband or Widower of any Daughter, of any such Clergyman.
5. Any Director, or other person holding any office in the Society.

Any person not thus qualified may make Assurances upon Life, if the persons upon whose lives such assurances are to be made are themselves qualified.

Applications for Assurances, &c., &c., may be made personally at the Office, 1 and 2, The Sanctuary, Westminster, or by letter addressed to the Secretary.

EAGLE INSURANCE COMPANY,

(Established 1807)

(FOR LIVES ONLY,)

No. 79, PALL MALL, LONDON, S.W.

Directors.

SIR GEORGE RUSSELL, Bart., *Chairman.*

CHARLES BISCHOFF, Esq., *Deputy-Chairman.*

THOMAS ALLEN, Esq.

The Rt. Hon. SIR WM. HART DYKE, Bart., M.P.

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Colonel The Hon. W. P. M. C. TALBOT.

Actuary and Secretary.

GEORGE HUMPHREYS, Esq., M.A., F.I.A.

**SUMS ASSURED .. .. ..

THE ECONOMIC
LIFE ASSURANCE SOCIETY,

No. 6, NEW BRIDGE STREET, BLACKFRIARS, LONDON, E.C.

ESTABLISHED 1823.

Directors.

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The Right. Hon. E. PLEYDELL BOUVERIE, *Deputy-Chairman.*

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Rt. Hon. LORD SUDELEY.

Actuary.—RICHARD CHARLES FISHER, Esq.

ADVANTAGES OFFERED BY THE SOCIETY:—

The lowest rates of Premium on the **Mutual System**, for young and middle-aged lives, with early participation in Profits.

Number of Policies in Force	10,367
Sums Assured, with Bonus Additions	£9,237,255
Security—Accumulated Fund	£3,619,661
Annual Income	£377,042
Total Claims paid, with Bonus Additions	£7,173,361
Total Bonuses declared to 1883 inclusive	£4,153,415

Bonus.—The Society being on the **Mutual** principle, the Assured share the **whole of the Profits.** Policies effected before 31st December of each year receive a full year's Bonus for the year of entry.

QUINQUENNIAL DIVISION OF PROFITS, 1884.

Assets	£3,619,661
Liabilities	3,050,831
Surplus	£568,830

Prospectuses, Statement of Accounts, and full particulars may be obtained on application to

JOHN RALPH GRIMES, *Secretary.*

EQUITABLE LIFE ASSURANCE SOCIETY.

OPPOSITE THE MANSION HOUSE, LONDON.

Founded A.D. 1762.

THE OLDEST LIFE OFFICE ON THE MUTUAL PRINCIPLE IN THE WORLD.

BONUS TABLE FOR 1885.

TABLE showing the total Amount payable under a Policy for £1,000 (including the additions), in the event of its becoming a claim after payment of the premium due in the year 1885.

Date of Policy.	Sum payable including additions. £	s.
From 25th Jan. 1817 to 24th April 1817	3795	0
,, 24th April 1817 to 16th April 1818	3695	0
,, 18th April 1818 to 4th Feb. 1819	3595	0
,, 5th Feb. 1819 to 3rd Jan. 1820	3495	0
,, 7th Jan. 1820 to 22nd Dec. 1820	3395	0
,, 23rd Dec. 1820 to 30th Nov. 1821	3295	0
,, 1st Dec. 1821 to 7th Mar. 1823	3195	0
,, 7th Mar. 1823 to 24th May 1824	3095	0
,, 25th May 1824 to 8th Mar. 1825	2995	0
,, 9th Mar. 1825 to 3rd Nov. 1826	2920	0
,, 7th Nov. 1826 to 15th July 1828	2845	0
,, 21st July 1828 to 1st Mar. 1830	2770	0
,, 3rd Mar. 1830 to 24th Nov. 1831	2695	0
,, 24th Nov. 1831 to 1st Aug. 1833	2620	0
,, 1st Aug. 1833 to 18th June 1835	2545	0
,, 19th June 1835 to 21st July 1837	2470	0
,, 21st July 1837 to 22nd Jan. 1839	2395	0
,, 24th Jan. 1839 to 10th Dec. 1840	2320	0
,, 15th Dec. 1840 to 2nd Nov. 1842	2245	0
,, 12th Nov. 1842 to 18th June 1845	2190	0
,, 19th June 1845 to 2nd Mar. 1847	2135	0
,, 3rd Mar. 1847 to 14th Nov. 1848	2080	0
,, 14th Nov. 1848 to 19th Nov. 1850	2025	0
,, 19th Nov. 1850 to 26th July 1853	1970	0
,, 26th July 1853 to 31st Dec. 1855	1915	0
,, 1st Jan. 1856 to 31st Dec. 1856	1860	0
,, 1st Jan. 1857 to 31st Dec. 1857	1805	0
,, 1st Jan. 1858 to 31st Dec. 1858	1750	0
,, 1st Jan. 1859 to 31st Dec. 1859	1695	0
,, 1st Jan. 1860 to 31st Dec. 1860	1657	10
,, 1st Jan. 1861 to 31st Dec. 1861	1620	0
,, 1st Jan. 1862 to 31st Dec. 1862	1582	10
,, 1st Jan. 1863 to 31st Dec. 1863	1545	0
,, 1st Jan. 1864 to 31st Dec. 1864	1507	10
,, 1st Jan. 1865 to 31st Dec. 1865	1470	0
,, 1st Jan. 1866 to 31st Dec. 1866	1432	10
,, 1st Jan. 1867 to 31st Dec. 1867	1395	0
,, 1st Jan. 1868 to 31st Dec. 1868	1357	10
,, 1st Jan. 1869 to 31st Dec. 1869	1320	0
,, 1st Jan. 1870 to 31st Dec. 1870	1300	0
,, 1st Jan. 1871 to 31st Dec. 1871	1280	0
,, 1st Jan. 1872 to 31st Dec. 1872	1260	0
,, 1st Jan. 1873 to 31st Dec. 1873	1240	0
,, 1st Jan. 1874 to 31st Dec. 1874	1220	0
,, 1st Jan. 1875 to 31st Dec. 1875	1180	0
,, 1st Jan. 1876 to 31st Dec. 1876	1140	0
,, 1st Jan. 1877 to 31st Dec. 1877	1100	0
,, 1st Jan. 1878 to 31st Dec. 1878	1060	0
,, 1st Jan. 1879 to 31st Dec. 1879	1020	0

The Equitable has never allowed Commission.

J. WARE STEPHENSON, *Actuary.*

GUARDIAN
Fire and Life Assurance Company.

Established 1821, *and Empowered by Special Acts of Parliament.*

Subscribed Capital	**£2,000,000**
Paid up Capital	**1,000,000**
Total Funds in hand	**3,861,000**
Total Income, over	**718,000**

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DEPUTY-CHAIRMAN—BEAUMONT WILLIAM LUBBOCK, ESQ.

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Surveyors.— JOSEPH JENNINGS, ESQ., Langham Street, Cavendish Square; MESSRS. DRIVERS & Co. (Valuers for Landed Securities), 4, Whitehall.

Head Office:—11, LOMBARD STREET, LONDON, E.C.

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Actuary and Secretary.—T. G. C. BROWNE.

Bankers.—MESSRS. MARTIN & Co., 68, Lombard Street.

Law Courts Branch:—21, FLEET STREET.

Branch Manager.—RALPH P. HARDY. | *Bankers.*—MESSRS. CHILD & Co., 1, Fleet St.

LIFE DEPARTMENT.

The Last Quinquennial Valuation was made on the basis of the Institute of Actuaries' (H^M) Table of Mortality and 3 per cent. interest The Valuation was strictly a net premium one, the whole of the loading being reserved.

FEATURES OF LIFE POLICIES.

Payment of Claims is generally made immediately after proof of death and title.

A *Guardian* Policy of five years' standing can be revived within thirteen months on payment of the premiums overdue and a fine, no evidence of health being required.

A *Guardian* Policy of five years' standing is free from all restrictions as to foreign residence and travel, provided the life assured has attained the age of 30, and has not previously exceeded the free limits, nor is in the military, naval, nor mercantile marine services.

Forfeiture of a *Guardian* Policy on account of Suicide is limited to thirteen months.

A *Guardian* Policy is indisputable on the ground of any *bonâ fide* error in the proposal after the age has been admitted.

The *Guardian* issues, when required, special forms of Trust Policies for wife and children.

The *Guardian* system of Paid-up and Non-Forfeiture Policies gives ample protection to Policy-holders who from any cause cannot continue their periodical payments.

Life Fund (1883) - - £2,217,000 | Life Income - - - £281,000

FIRE DEPARTMENT.

Insurances effected on Property at Home and Abroad at Moderate Rates.

Fire Fund (1883) - - £457,000 | Fire Income - - - £391,000

HAND-IN-HAND
FIRE AND LIFE INSURANCE SOCIETY,
26, NEW BRIDGE STREET, BLACKFRIARS, LONDON, E.C.

Instituted in 1696.—*Extended to Life Insurance*, 1836.

DIRECTORS.

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Vice-Admiral Sir LEOPOLD G. HEATH, K.C.B.
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Actuary—JAMES TERRY, F.I.A.

The **oldest Insurance Office** in the World.

The **only Mutual Office** in the Kingdom for both **Fire and Life.**

There being **no Shareholders, all Profits** are **divided yearly amongst the Insured.**

BONUS RETURNS.

LIFE—1st Series	75	per Cent. per Annum.
2nd Series (according to the age of the Policy) ...	70 to 75	
3rd Series do. do. ...	50 rising to 60	
4th Series, after 1st Five Years, to commence at .	45	
FIRE—Annual Policies of Two Years' standing, with certain exceptions	25	

No Policy Holder is subject to **any Personal Liability.**

The Directors are **willing to appoint as Agents persons of good position and character.**

VALUATION BALANCE SHEET, 31*st DECEMBER*, 1883.

ASSETS.

General Accumulated Fund, Fire and Life	£1,688,064
Life Assurance Fund, under Act of 1870	411,057
Present Value of Life Premiums	1,663,112
	£3,762,233

LIABILITIES.

Present Value of Insurances and Annuities, LIFE ...	£2,326,014
Sum Reserved for future Abatements on Premiums, LIFE	959,808
Sum Reserved for Bonus Returns on unexpired Policies, FIRE	23,784
Premiums in hand on account of unexpired terms of Insurance, FIRE	38,947
Balance of Assets unappropriated	413,680
	£3,762,233

The ACCOUNTS and STATEMENTS as deposited with the Board of Trade, as well as Prospectuses and Forms of Proposal, may be had of any of the Society's Agents, or on application at the Head Office.

BENJAMIN BLENKINSOP, *Secretary.*

THE LONDON ASSURANCE.

Incorporated by Royal Charter, A.D. 1720.

FOR FIRE, LIFE, AND MARINE ASSURANCES.

No. 7, ROYAL EXCHANGE, LONDON, E.C.

Branch Offices
- No. 55, PARLIAMENT STREET, LONDON, S.W.
- „ 14, EAST PARADE, LEEDS.
- „ 16, CROSS STREET, MANCHESTER.
- „ 28, EXCHANGE STREET EAST, LIVERPOOL.
- „ 104, WEST GEORGE STREET, GLASGOW.

WILLIAM RENNIE, ESQ., *Governor.*

LEWIS ALEXANDER WALLACE, ESQ., *Sub-Governor.*
GEORGE WILLIAM CAMPBELL, ESQ., *Deputy-Governor.*

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The Hon. FRANCIS PARKER, 3, Temple Gardens, E.C.

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JOHN P. LAURENCE, Esq.

Underwriter.
JOHN STEWART MACKINTOSH, Esq.

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ARTHUR H. BAILEY, Esq.

Manager of the Fire Department.
JAMES CLUNES, Esq.

Medical Officers.

EDWARD CLAPTON, M.D., 10A, St. Thomas's Street, Southwark.
JOHN HARLEY, M.D., 39, Brook Street, Grosvenor Square.

The Corporation has granted Fire, Life, and Marine Assurances for more than a Century and a half; during that long period it has endeavoured to introduce into its practice all the real improvements that have from time to time been suggested, and to afford every facility for the transaction of business.

Of the Share Capital the sum of £448,275 has been paid up. Funds in hand exceed £3,300,000.

Claims under Life Policies are payable upon proof of death and title being furnished to the satisfaction of the Court of Directors.

Prospectuses and Copies of the Accounts pursuant to "The Life Assurance Companies Act, 1870," can be had on application personally or by letter.

NORTH BRITISH AND MERCANTILE INSURANCE COMPANY.

Incorporated by Royal Charter and Special Acts of Parliament.

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Richard Brandt, Esq.
Alexander H. Campbell, Esq.
Hon. C. N. Lawrence, Esq.
Charles A. Cater, Esq.
P. du Pré Grenfell, Esq.
Quintin Hogg, Esq.
Charles W. Mills, Esq.
George Garden Nicol, Esq.
John Sanderson, Esq.
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Resources of the Company as at 31*st December*, 1883 :—

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	£	s.	d.
The Net Premiums received during the year 1883, after deducting Re-insurances, amounted to	1,107,745	9	9
The Net Losses by Fire during the year were, after deducting Re-insurances	672,825	13	10
This embraces not merely all losses actually ascertained and paid, but a full estimate of all claims that had arisen prior to 31st December.			
The Fire Funds, after payment of the Dividend and Bonus after-mentioned, and irrespective of the Paid-up Capital, are as follows :—			
Reserve	£1,170,000	0	0
Premium Reserve...	369,248	9	11
Balance of Profit and Loss Account...	52,986	15	3
	£1,592,235	5	2

LIFE DEPARTMENT.

	£	s.	d.
894 New Policies were issued during the year, assuring	814,819	0	0
The New Premiums on which amount to the sum of	29,572	1	5
During the year, 296 Deaths, by which 397 Policies emerged, were proved, and 16 Endowments matured. The sums which thus became payable, after deducting Re-assurances, amounted, with Bonus additions, to the sum of	346,122	4	4
The Income for the year of the Life Branch from Premiums and Interest amounted to...	471,407	15	7
In the Annuity Branch 83 Bonds were granted, securing immediate Annuities to the amount of £5,390 12*s* 7*d*. yearly, and Survivorship Annuities to the amount of £855 yearly, for which the Company received the sum of £59,520 11*s*. 6*d*., by single payment, and £109 12*s*. 6*d*. by annual Premium.			
During the year 57 Annuities have fallen in, relieving the Company of the sum of £4,087 9*s*. 8*d*. yearly.			
The Life Fund now amounts to	3,340,918	11	2
The Annuity Fund now amounts to	500,275	17	11

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EXISTING ASSURANCES exceed..	**£7,000,000**
INVESTED FUNDS	**£2,323,284**
ANNUAL INCOME	**£310,371**
CLAIMS and SURRENDERS PAID exceed	**£7,500,000**
BONUSES DECLARED	**£2,629,814**

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	£	s.	d.
Viz., on the 19th August, 1882	3,237,473	7	4
Sum Assured—Inclusive of Bonus Additions—at that date	4,561,308	11	11
Estimated Liability thereon	1,495,587	17	6
Being less than one-half the Fund invested.			
Total Amount of Bonus Additions made to Policies	3,646,588	16	11
Amount of Profits divided for the Seven Years ending 19th August, 1882	592,076	9	9
Annual Income	273,857	17	3
Total Claims paid—Inclusive of Bonus Additions	9,021,234	18	0

TABLE

Showing the Bonus Additions made to Policies up to the Year 1882.

No. of Policy.	Sum Assured.	Amount of Bonuses.	Total Amount Payable.
	£	£ s. d.	£ s. d.
2378	250	636 9 2	886 9 2
3511	2,000	4,075 13 4	6,075 13 4
4192	5,000	9,169 3 4	14.169 3 4
4488	2,000	3,531 13 4	5,531 13 4
4526	3,000	5,093 10 0	8,093 10 0
4979	1,000	1,571 16 8	2,571 16 8

*** Copies of the Accounts deposited with the Board of Trade, pursuant to "The Life Assurance Companies Act, 1870," as well as of the Periodical Valuation Accounts, and every information may be obtained on application.

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